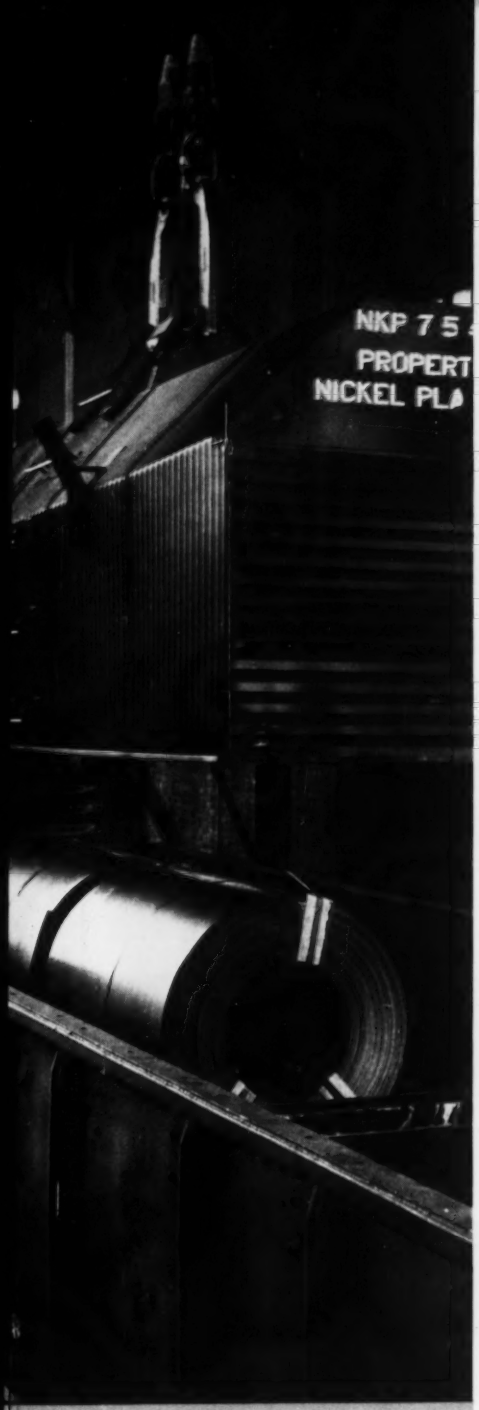
MARCH 2, 1959

STEEL
The Metalworking Weekly

A PENTON PUBLICATION



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Wire Shotblasted for Drawing

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Can Old Equipment Meet the Test?

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How To Get More from Riveting

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What Depreciation Reform?

STEEL survey of 918 metalworking executives shows: Bracket system, speedup of allowances, and reinvestment are favored as methods for reform.

Finished Steel To Move in Big Tonnages in March . . .

• Shipments will hit 7 million tons for first time since June, 1957. Users will have 21 million to 22 million tons in stock by July 1, a factor that'll sharply influence course of steel wage talks . . . . . Page 170

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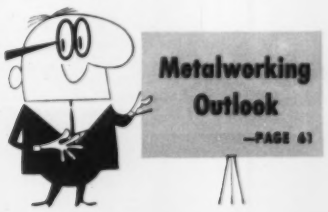

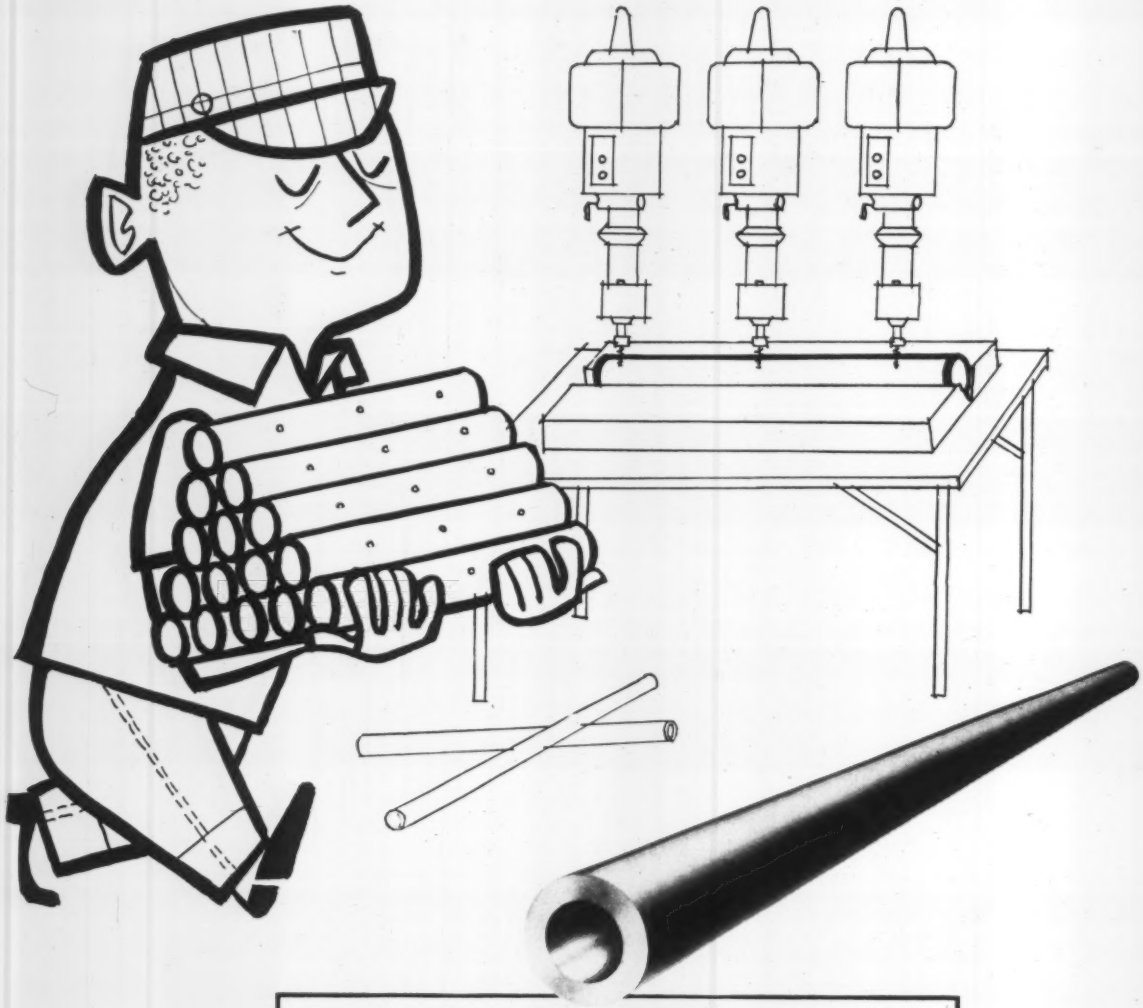

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With B&W Job-Matched Tubing for mechanical applications you get:

- . . . the right choice from a wide range of analyses, sizes, tempers, and finishes to exactly meet fabricating requirements
- . . . consistently uniform wall thickness, diameter, and concentricity to simplify fabrication
- . . . quality control which assures uniform properties and characteristics in every tube

Whatever your requirements, B&W Job-Matched Tubes can help keep your fabricating costs down.

For complete information about B&W Job-Matched Mechanical Tubing call the local B&W District Sales Office or write for Bulletin TB-352. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.

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Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals

When to use Leaded Steel

BETHLEHEM'S NEW LEADED SCREW STOCK,

CUTS MACHINING COSTS, INCREASES PROFITS WHEN USED ON THE RIGHT JOBS

Beth-Led is a new free-machining steel, a high-sulfur carbon screw stock to which lead has been added under rigid quality controls. Its advantages: faster metal removal, increased tool life, better chip control, smoother machined finishes—resulting in a superior quality product *produced at lower cost.*

Beth-Led is a natural for many jobs, particularly those which meet conditions like these:

1. Where your product involves mass production methods of machining from bar stock;
2. Where the volume of chips exceeds 25 per cent in single or multiple tooling operations;
3. Where your bar automatics have ample capacity for higher rates of metal removal—speeds, feeds, and depths of cut.

If you have jobs like this, then Beth-Led may be your answer to increased production, with no sacrifice of quality. Our metallurgical engineers will gladly discuss the application of this leaded steel to your product.

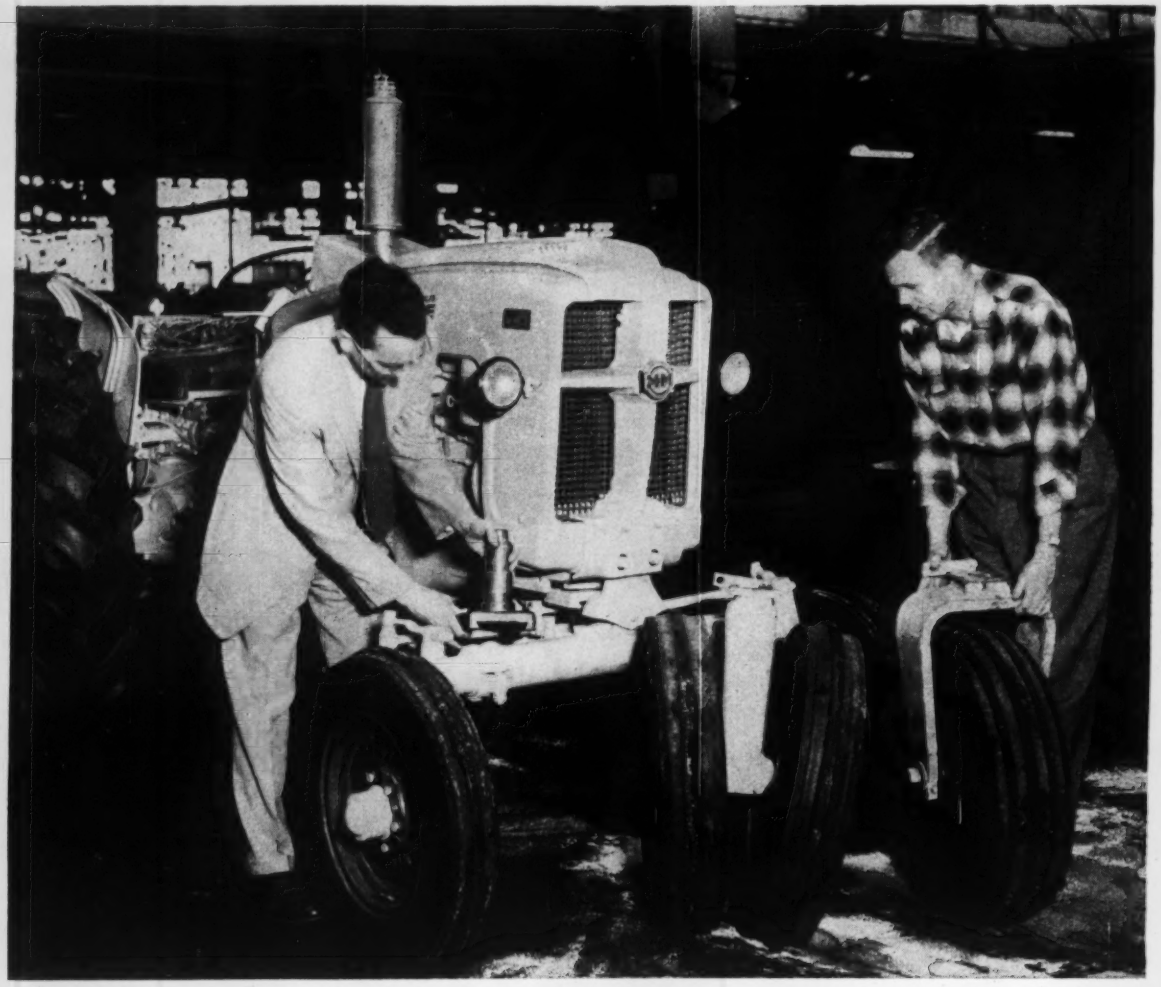
Plan now to give Beth-Led a trial. As a cold-finished bar product, Beth-Led is distributed through non-integrated cold drawers.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



"Task-Forged" part reduces tractor inventory, sparks sales feature for Minneapolis-Moline

A three-in-one farm tractor that permits quick interchange of three different front wheel assemblies! Minneapolis-Moline came up with this great idea for increasing product salability and reducing inventories – both at the factory and with its dealers.

Key part in the multi-purpose unit was a steering link component. It had to be strong enough to steer and support the front end of the tractor–including the various wheel assemblies–yet light enough for one-man handling. A forging? Of course! Minneapolis-Moline designed it as a drop forging because it had an unusual dovetailed groove in the head and an off-center shaft to boot.

The "Task-Forging" team at COMMERCIAL, working closely with Minneapolis-Moline engineers, proved that the "idea" steering link component could be better produced as an upset forging on their 6" upsetter–and with many cost-saving advantages to Minneapolis-Moline.

To begin with, the upset forged link saves considerable forged metal. All flash metal is virtually eliminated. Still more forged metal is saved because the upset forging is made from a round bar – involves no forging draft.

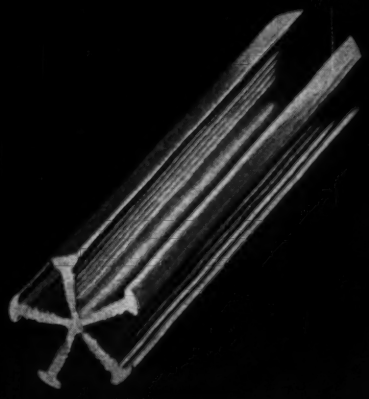
The upset forged link lowered machining costs and greatly improved machining conditions. There's less metal to be machined and it's better positioned for easier removal. Furthermore, there's no heavy part line at 180° to cut through. Tool breakage is no problem either because tool speed and feed is constant and continuous.

From an upset forging of 27 lbs. to a finished machined part of 22½ lbs. –there's positive proof of the important savings forging makes possible in both forged metal and machining.

Perhaps you're looking for help in the forming of a new "idea" part. Or, you may be seriously considering an improvement in the forming of an already existing part. In either case, "Task-Forging", COMMERCIAL'S new metal forming service may be able to help you. Write to Commercial Shearing & Stamping Company, Dept. L-10, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

AGAIN



P-K Internal-Fin Coolers can be furnished insulated with Rock Cork laid in asphalt and covered with a heavy steel jacket. Illustration shows insulated cooler.

Revere helps fit the metal to the job

AND PATTERSON-KELLEY CUSTOMERS SAVE 3 WAYS

Because of its unique design, the Patterson-Kelley Freon Water Cooler shown at right above saves space, requires less Freon, while its reduced weight and size mean lower cost.

With the P-K Type FO Internal-Fin Freon 22 Water Cooler the installation can be designed for a shell 2 diameters less and 1 to 2 feet shorter than with conventional plain or bare tube coolers. This is made possible by the use of ¾" O.D. x .035" gauge Revere copper tube drawn over a Revere aluminum extruded fin as shown above. Serrated surface of the fin enhances refrigerant vaporization.

By making both the tube and the extruded fin, and assembling them in the same plant a tight contact between the two metals is assured, thus establishing maximum heat transfer. Once again Revere has helped fit the metal to the job, money was saved and a more efficient product produced.

Why not consult with Revere's Technical Advisory Service and take advantage of its extensive knowledge in "fitting the metal to the job." This Service has saved others money, why not you?

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N.Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N.Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities. Distributors Everywhere.

Did a two-belt job handling red-hot coke

You'd look a long time to find a tougher conveyor job: tonnage is heavy—coke is highly abrasive—it's handled glowing hot—and it's side-loaded on the belt, an invitation to uneven wear. So, all things considered, management wasn't too unhappy with a 700,000-ton average from belts at this big steel mill's coke plant.

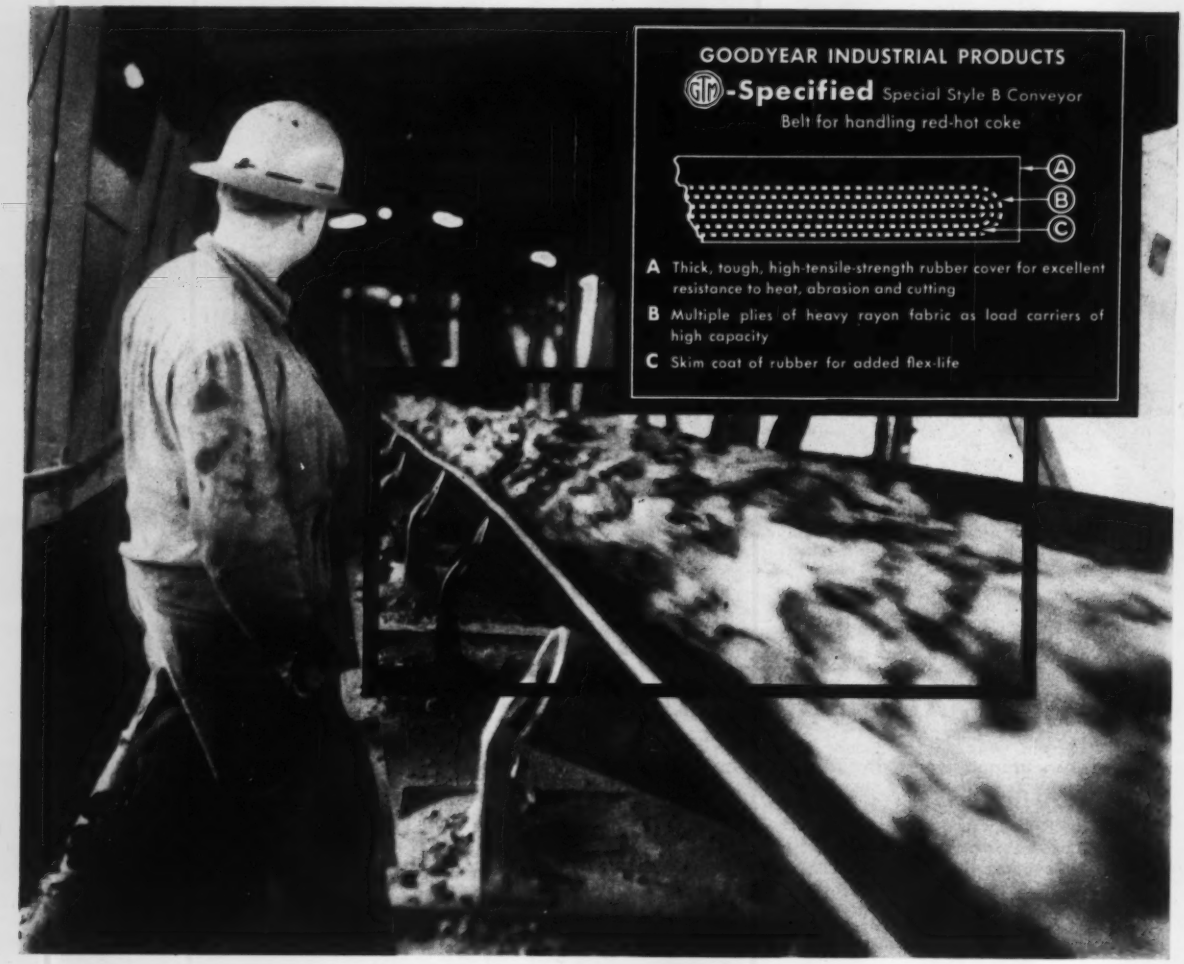
But the G.T.M.—Goodyear Technical Man—knew he could do better than that. His recommendation: a special Style B conveyor sinewed with plies of heavy-duty rayon to defy the abusive service.

And he was right again! In fact, the G.T.M.'s belt hustled almost 1,500,000 tons—better than twice the average of those previously used. And because it troughed better and trained more readily, it proved far easier to reverse for more equalized wear—held its fasteners better—needed less maintenance all around.

And that's just one more case where the G.T.M. had the answer—where competition had fallen far short. To put him to work on your problem, contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*


GOODYEAR INDUSTRIAL PRODUCTS
GT-Specified Special Style B Conveyor Belt for handling red-hot coke
A
B
C
A Thick, tough, high-tensile-strength rubber cover for excellent resistance to heat, abrasion and cutting
B Multiple plies of heavy rayon fabric as load carriers of high capacity
C Skim coat of rubber for added flex-life

CONVEYOR BELTS BY

GOODYEAR

THE GREATEST NAME IN RUBBER

This Week in STEEL

The Metalworking Weekly

March 2, 1959
Vol. 144 No. 9

EDITORIAL 67

Industry can't expect to get realistic depreciation allowances until it can agree on how they should be figured.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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APEX

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Apex, Super Duty Fire Brick Gives You More Fire Clay In Its Densest, Most Compact Form To Increase:

1. **Resistance to wear**
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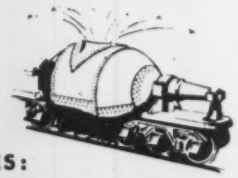

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For record tonnage in Closed Hot Metal Torpedo Type Ladles, Hot Metal Mixers, and for maximum service and heat exchange in Hot Blast Stove Checkers and Open Hearth Checkers.

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behind the scenes

Welding Comes of Age

Maybe it's the sign of a warped mind to think along these lines, but when one wears a crooked hat, what else can one do? Recently Eleanor Roosevelt publicly blessed a synthetic butter called margarine, and where do you suppose that left President Dwight David Eisenhower? The Democrats had stolen a march (marcharine, that is) on the Republicans in the department of public relations, and Mr. Eisenhower was understandably concerned. To retain face, he felt compelled to bless something in a hurry.

By a remarkable coincidence, the publicity committee of the American Welding Society approached the President at that moment. They explained that welding should be recognized publicly as a prime and indispensable fabrication tool in modern industrial practice, and the hero of Normandy rose like a salmon. "By Presidential proclamation," he remarked, "April will be declared National Welded Products Month!"

From any point of view, there is no comparison between margarine and welding, and we think the President scored a definite coup over Mrs. Roosevelt in the matter of benediction. Never before in the history of welding has there been so much offered in the way of materials, equipment, and knowledge to help create a welded world. Half a century ago, practically the only stuff that could be welded was iron; and only 25 years ago engineers were wondering how to weld aluminum. Today, welding ranges from wisps of vapor from threadlike filaments of platinum welded under a magnifying glass, to the pyrotechnics attendant to the fusion of 6 in. armor plate.

April, then, will be dedicated to welded products. In a Communist dictatorship, we would be constrained to think of nothing else but welding during April—but here, if we wish, we may also think of violets, daffodils, and those ever-lovin' lilacs.

Fresh Air, Anybody?

Air pollution has plagued man ever since he substituted lungs for gills, and before that, if he had any of the ornery beginnings of man in him, he probably complained about water pollution. If he was obliged to breathe the waters of the Delaware, Chesapeake, or Biscayne Bay today, he would have real cause for complaint. Returning to polluted air, we have heard it referred to as "garbage in the sky"—a natural.

On Page 84 of this week's issue, STEEL presents an article concerning garbage in the sky. It describes what industry is doing about air pollution and lists the prospects for tough federal legislation on the matter. Fact finders and statisticians can scare the devil out of you with their revelations about the stuff that falls each day on each square mile of industrial areas. If their findings don't shake you too much, the bacteriologists and medical sleuths can rock city dwellers with the news that the air they suck into their lungs resembles something shaken out of a vacuum cleaning bag.

Files Story Instead of Bars

When ideas for features or reports come unsolicited, the editors say that "they came in over the transom." We have an uneasy feeling that the story on Page 77 about a certain stamping plant shouldn't be associated with the term "over the transom," because it came from two inmates of South Michigan State Prison, and well, some matters call for delicate handling. Last fall an inquiry came addressed to STEEL. It was from a person temporarily secluded from society, courtesy of the State of Michigan. He wanted to know if STEEL would be interested in a story about a (you will pardon the expression, but we just can't help ourselves) captive stamping plant. He said it employed—or, rather, utilized—330 inmates, who produced such things as car plates, lockers, chairs, baskets, beds, coat racks, and road signs.

The editors expressed a mild interest, and when the story finally turned up, complete with pictures, it had been edited, processed, cleaned, censored, fumigated, and made completely acceptable to society.

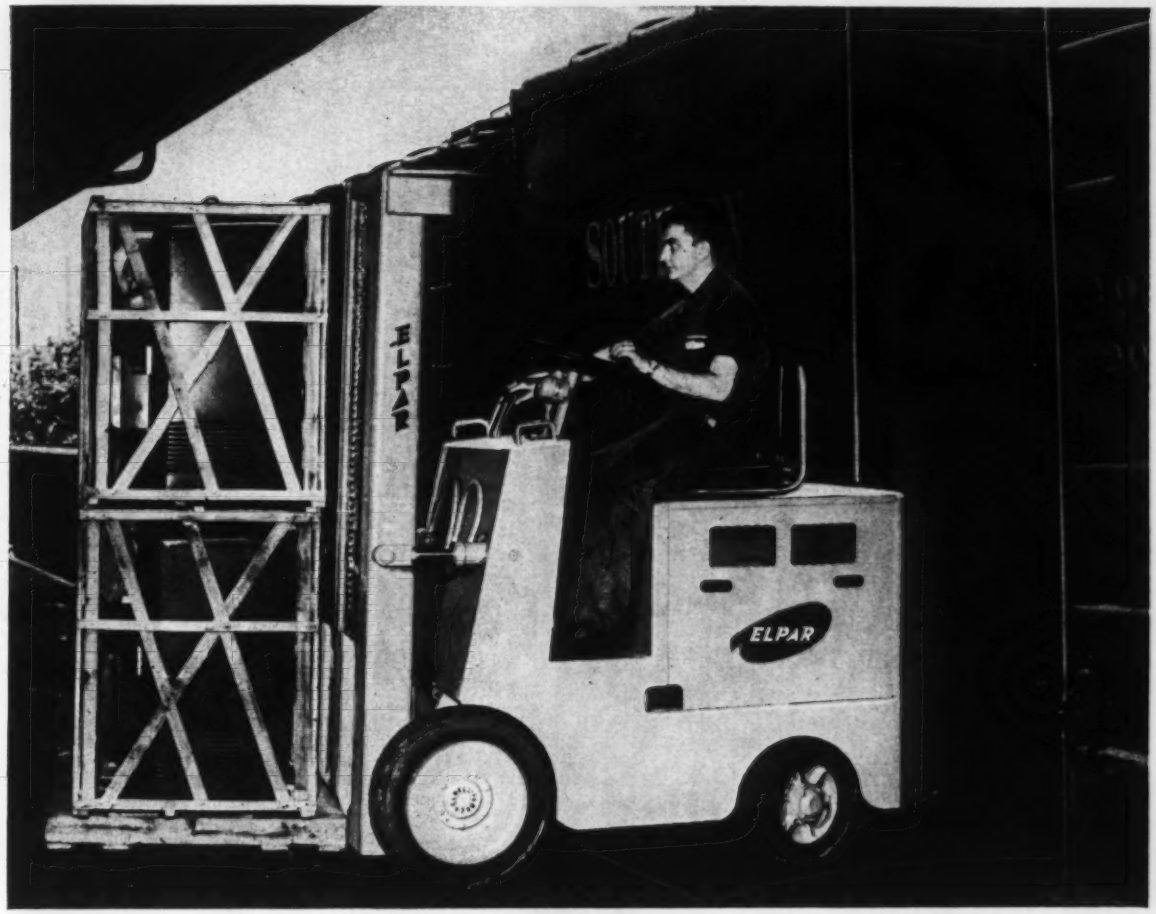
If the manuscript broke out and made good, perhaps the authors may follow. It is warming to reflect that stone walls do not a prison make—although the institution in question is reputed to be the world's largest walled prison.

Coins in Free Fall

Mention of statisticians a few moments ago brings to mind the case of the curious numismatist. This old boy, Thomas Thomas (he came from Walla Walla, by the way) always tossed old coins about when he played with his collection. One day he found himself juggling a groat, a pfennig, a quetzal, and a shilling, and he began wondering. "If I toss them together," he murmured, "in how many different ways can they fall?"

Shrdlu

(Metalworking Outlook—Page 61)



New ELPAR Model F-45T, Electric Powered, Rated 3000# Cap. at 24"

New ELPAR Fork Truck

...built for FAST handling in TIGHT places!

Faster lift speeds . . . increased travel speeds . . . tighter turning radius . . . shorter wheelbase — are just a few of the important features of this modern ELPAR fork truck, available in 3000 and 4000 pounds capacity.

For faster handling in confined spaces, crowded docks, in freight cars or trucks — it's more productive because it maneuvers easily. Because it's electric powered, it can start fast and reverse direction at a flip of a switch. With knuckle type steering axle it handles as easily as an automobile.

To get more work done per hour — day in and day out, with maintenance costs at an all time low, investigate this efficient ELPAR electric powered truck.

Write for more details – Ask for the new F-45T bulletin.

ELPAR

THE **ELWELL-PARKER** ELECTRIC COMPANY
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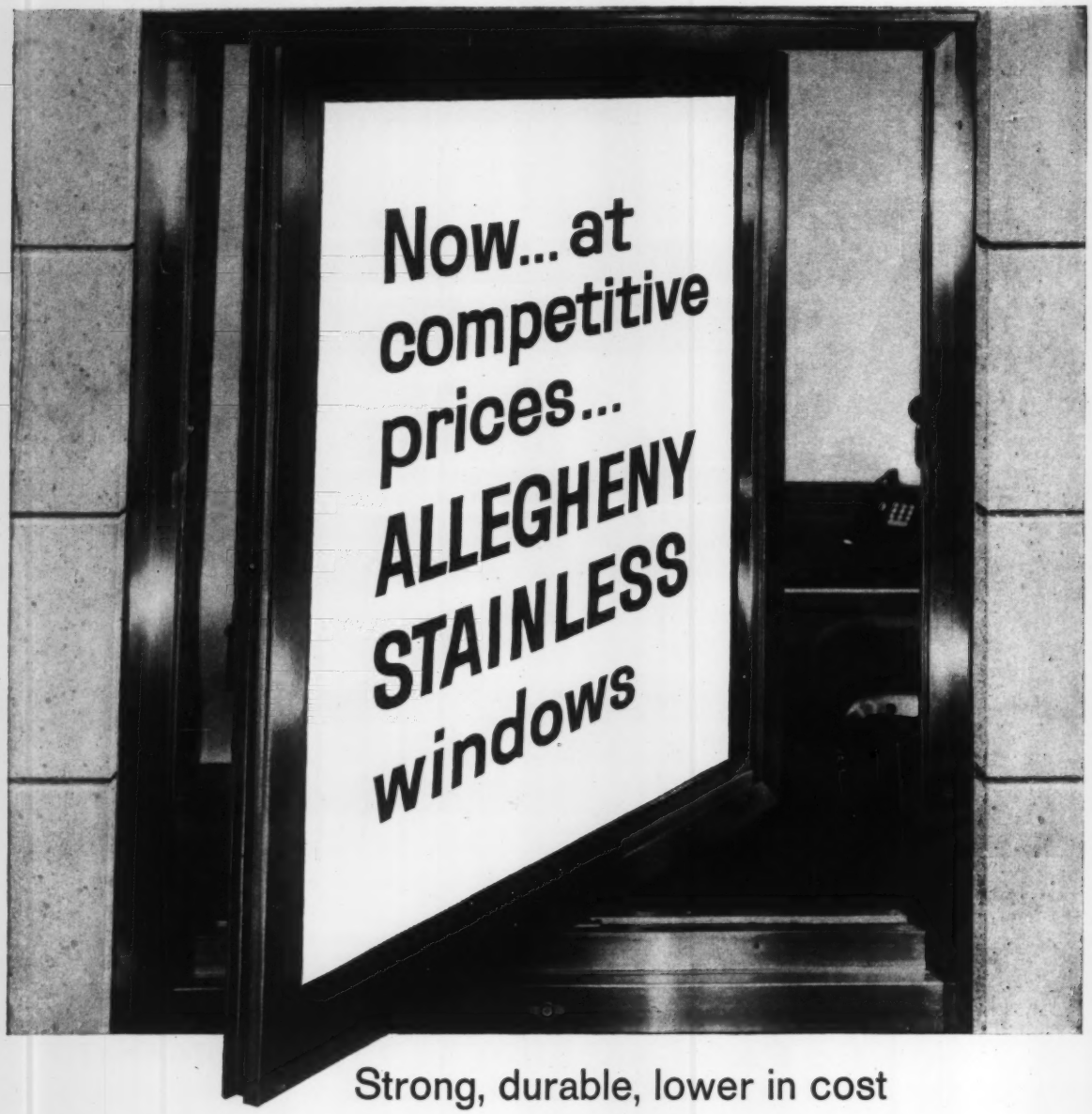
ELECTRIC TRUCKS — DOUBLE THE LIFE ... ONE-THIRD THE OPERATING COST



Strong, durable, lower in cost

You can now specify windows of sturdy, lasting stainless steel—at a cost much lower than you may think. Reason? Manufacturers now *roll-form* windows from Allegheny Stainless and pass the fabrication economies on to you.

In actual bidding recently, the price of roll-formed Allegheny Stainless windows averaged only about 10% higher than another non-stainless metal.

Vital to architecture, durability and compatibility are inherent in Allegheny Stainless. It never requires chemical films for surface protection, and virtually cleans itself with normal rainfall. Because of an amazing resistance to corrosive atmospheres, the brightness and freedom-from-pitting of Allegheny Stainless are recorded history; yet different patterns, textures and colors make news each day.

Stainless steel windows—of all-welded design and tubular construction—are available in Allegheny Stainless Types 202 and 302.

Include Allegheny Stainless in your design-thinking now. Learn how you can get the quality of stainless steel windows for much less than you think. For additional facts, and manufacturers' names, write to *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Dept.* S-15.

WSW 7296

ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

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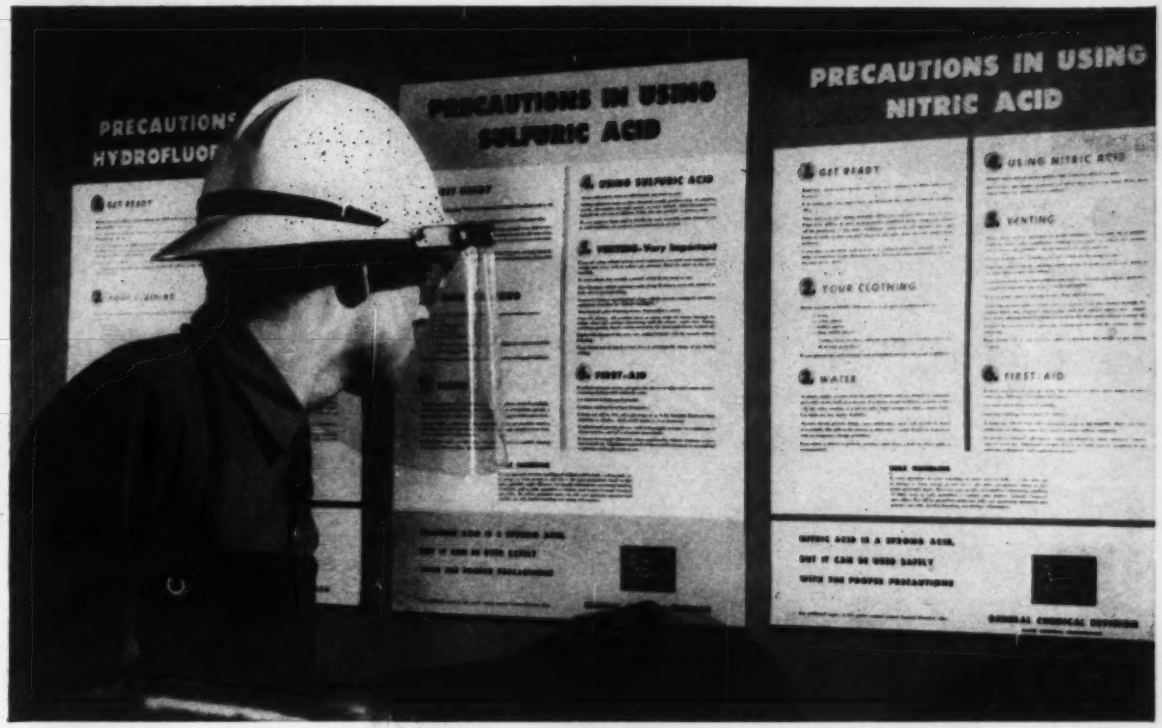


3 New Safety Posters on the Proper Handling of Strong Acids

SULFURIC
HYDROFLUORIC
NITRIC

Here's essential information on how to handle sulfuric, hydrofluoric and nitric acids safely . . . from the people who know them best.

As the nation's leading producer of these strong acids, General Chemical now offers 3 safety posters which spell out the precautions that *must* be taken when handling sulfuric, hydrofluoric or nitric acid. The posters contain such important information as: the proper clothing to wear and the equipment to use; the use of water as a neutralizer; the importance of venting; first aid, and many other necessary precautions.

The posters are free. They are large and easy to read—17 inches wide by 22 inches long. They come complete with metal rims, top and bottom, ready to post in a prominent position in your plant. To obtain any or all three, mail the coupon.

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Mail Coupon for Posters!

GENERAL CHEMICAL DIVISION ST-39
ALLIED CHEMICAL CORPORATION
40 Rector Street, New York 6, N. Y.

Please send your free safety posters checked below.

- ☐ Precautions In Using Sulfuric Acid
- ☐ Precautions In Using Hydrofluoric Acid
- ☐ Precautions In Using Nitric Acid

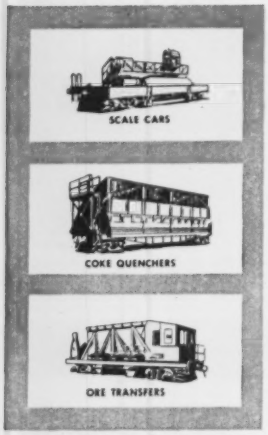
Name_____

Title_____

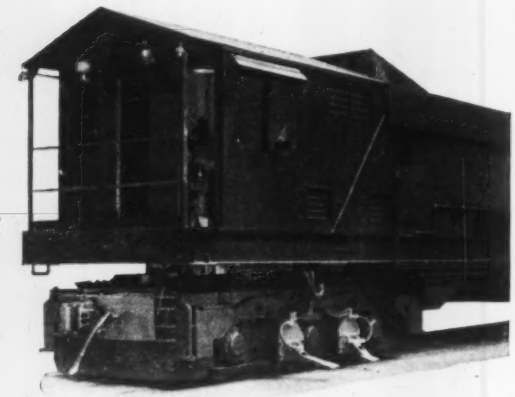
Company_____

Address_____

City_____ Zone____ State_____



sixty years of car building progress with an international reputation for quality.



100-TON BOTTOM DUMP ORE TRANSFER

Each car Atlas builds is engineered to specific task performance . . . and designed for personnel safety.

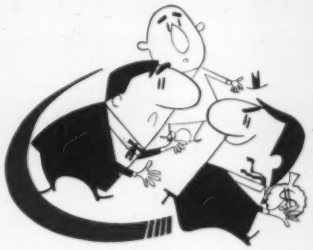
ATLAS

CAR & MFG. CO.

1100 IVANHOE ROAD, CLEVELAND 10, OHIO

LETTERS TO THE EDITORS

Series Used for 'Go-Around'



Your series of three articles on techniques for setting salaries (Jan. 19, p. 42; Jan. 26, p. 52; Feb. 2, p. 60) was most interesting. We are now getting prepared for our annual "go-around" of appraisals for 1959, and you have expressed some usable ideas which will help us in this program.

I would appreciate receiving a copy of each of these articles.

R. J. Knowlton
Supervisor
Employee Development & Training
Coated Abrasives Div.
Carborundum Co.
Niagara Falls, N. Y.

• • •

This was an interesting and provocative treatise. May I have a copy of each of the articles? They will aid in a course on national economy that I am undertaking.

D. Kilmer
Specialist
General Electric Co.
Schenectady, N. Y.

• • •

Your three-part series on techniques of setting salaries met this subject head on. In fact, this is one of the finest articles on the subject that I have ever encountered.

J. R. Biles
Buyer
Building Material Dept.
Montgomery Ward & Co.
Chicago

Amen

We certainly enjoyed and add our "Amen" to your editorial, "How To Be a Better Manager" (Feb. 9, p. 43). May we have 20 copies to present to our top management?

W. G. Mellinger
Chrysler Corp.
Detroit

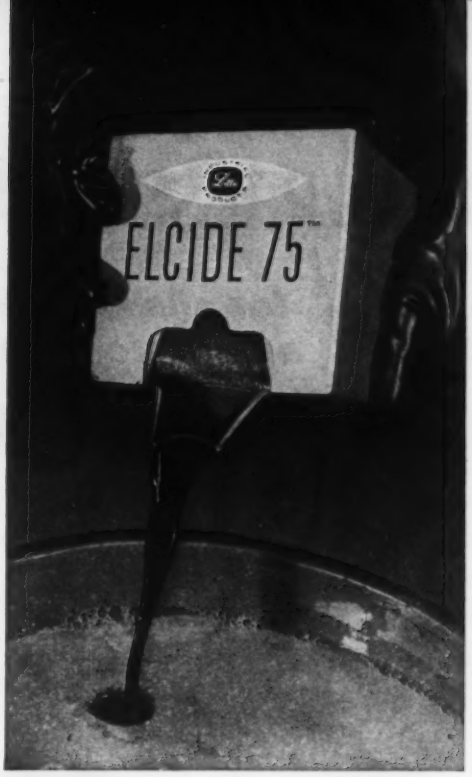
No Reason for Amazement

We think the headline for Market Outlook (Feb. 9, p. 107), "Buying Surge

(Please turn to Page 12)

Coolant sumps are breeding grounds for harmful bacteria. Laboratory analyses have found as many as 3 billion bacteria per ml. in emulsions that were only a few days old.

NOW, a simple, safe treatment with Elcide 75 keeps the bacteria count down and increases the useful life of standard duty soluble oil emulsions.



Bacteria Control: A new way to beat rising production costs

Many harmful types of bacteria contaminate coolant sumps and help destroy soluble oil emulsions. These bacteria first enter emulsions through the air, water, and the usual plant debris in the circulation system. They feed on the oil-water mixture until their build-up in the coolant causes odor, corrosion, and final separation of the emulsion. These microscopic organisms are costing the metalworking industry millions of dollars each year.

Now, this damage can be stopped with Elcide 75. Elcide 75 is a new bacterial inhibitor composed of two separate, but well-proven, anti-bacterial agents. One of these is related to a material that is popularly used in the exacting field of surgical practice. This powerful action controls a wider range of bacteria than the commonly used germicides now being marketed.

Elcide 75 has been carefully tested and evaluated by several large metalworking plants. Added to fresh emulsions at the rate of one ounce per each four gallons of emulsion, plant researchers found that its double control increased emulsion life up to 5½ times longer than untreated emulsions.

Extended emulsion life starts a chain reaction of decreased production costs. Less oil concentrate is needed to do the same job. The number of man-hours required for servicing machine sump tanks and disposing of waste oil is greatly reduced. Production increases because the machines run longer between emulsion changes. Additional benefits gained from the use of Elcide 75 include reduced corrosion of tools and products, and elimination of rancid odors.

Try Elcide 75 in your plant and total up your savings. You'll be pleasantly surprised to find out just how important bacteria control is to good plant management.

ELCIDE 75™

PATENT PENDING

KEEPS COOLANTS FRESH AS A DAISY!

ELCIDE 75: SPECIFICATIONS

(Lilly's brand of bacterial inhibitor for cutting fluids)

Active Ingredients—Sodium Ethylmercuri Thiosalicylate (Thimerosal) and Sodium *o*-phenylphenate

Package	Price per Gal.
1-gal. (4 per case), polyethylene	$8.50
5-gallon, polyethylene	$8.00
55-gallon, stainless steel	$6.50

Sold only through selected distributors. For more information or to place your order, phone or write:

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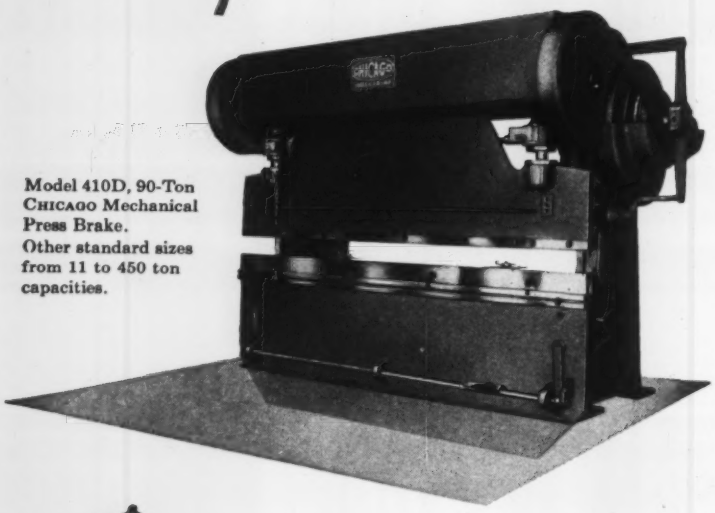
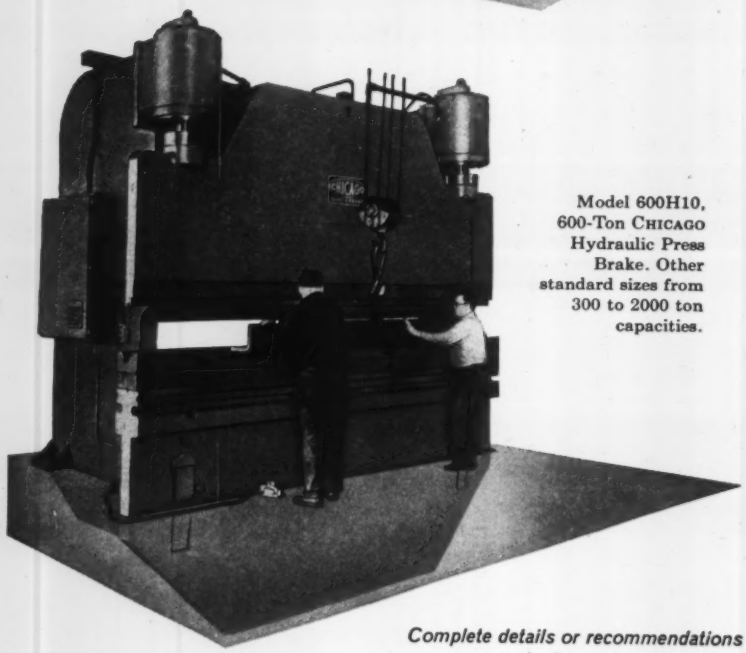


Model 410D, 90-Ton CHICAGO Mechanical Press Brake. Other standard sizes from 11 to 450 ton capacities.



Model 600H10, 600-Ton CHICAGO Hydraulic Press Brake. Other standard sizes from 300 to 2000 ton capacities.

Complete details or recommendations on any press brake work upon request

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Press Brakes
Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Forming Machines

CHICAGO DREIS & KRUMP

DREIS & KRUMP MANUFACTURING CO.
7458 S. Loomis Blvd., Chicago 36, Illinois

LETTERS

(Concluded from Page 10)

Amazes Steelmakers" is out of order. We see no reason why they should be amazed. They started the buying surge. What could they expect after calling up all their customers two or three times a day, warning them there would be a strike and they had better place their orders now?

H. Mertz
Atlas Machine & Iron Works Inc.
Arlington, Va.

Hopes for Added Information

We would appreciate receiving two reprints of "Continuous Casting, Impact Extrusion Spark Revolution in Aluminum Partmaking" (Jan. 12, p. 70). We found this article much to our interest and hope to see more information of this sort featured in your magazine.

A. R. Palczynski
Engineering Dept.
T. Sendzimir Inc.
Waterbury, Conn.

• • •

We found your article extremely interesting, and would appreciate receiving an additional copy for our file.

F. C. Baselt
Assistant National Manager-Technical
Beer & Beverage Containers
American Can Co.
New York

Stain, Not Strain

In reviewing our comments (p. 358) in the Jan. 5 issue, we note an error in the third paragraph. This sentence should read: "Work is already underway through the American Zinc Institute to solve the problem of wet storage *stain*. . . . . ."

Stuart J. Swensson
Secretary-Treasurer
American Hot Dip Galvanizers
Association Inc.
Pittsburgh

A Sufficient Reason

Please send me a copy of "Why Explosive Forming Works" by John Rinehart, Vasil Philipchuk, and John Pearson (Jan. 19, p. 62). Dr. Rinehart was a former member and Mr. Pearson is a current member of our Physics Division. Perhaps this may be sufficient reason to be favored with *two* extra copies!

W. F. Koehler
Head, Physics Division
Code 501
U. S. Naval Ordnance Test Station
China Lake, Calif.

• • •

I found this article extremely interesting, and I am sure others did also. As progress is made in this field, it would be interesting to see future articles on the subject.

H. W. Wedaa
Research & Development Laboratories
Government Products Div.
Rheem Mfg. Co.
Downey, Calif.

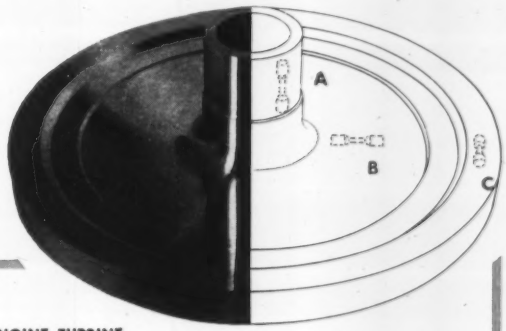
INSIDE A

CAMERON FORGING

Unique Metallurgical Properties

AMS-6407 LANDING GEAR COMPONENT MUST WITHSTAND UNUSUAL STRESSES.

		Typical Properties			
		Tensile Strength	Yield Strength	Elongation	Reduction of Area Transverse
A	Tube, Transverse	236,000	203,000	12.7%	45.1%
B	Fork, Transverse	233,000	205,000	10.6%	31.9%



A-286 JET ENGINE TURBINE WHEEL OF SPECIAL ALLOY MEETS UNUSUAL DEMANDS.

		Typical Properties			
		Tensile Strength	Yield Strength .2% Offset	Elongation	Reduction of Area
A	Hub, Longitudinal	158,000	117,000	22.2%	40.0%
B	Web, Radial	159,000	116,000	21.3%	40.0%
C	Rim, Tangential	162,000	117,000	20.3%	39.7%

UNIFORMLY FINE GRAIN SIZE and uniformly high properties from center to surface are characteristic of the Cameron technique. Intricate, unusual, or conventional shapes are produced in a single heat.

INCREASED TRANSVERSE DUCTILITY—several times above normally expected values. Transition from billet to final shape results in movement of metal under high internal pressure.

HIGH ULTRASONIC STANDARDS are consistently met by internal working of the metal which breaks up segregated material inherent in the center of steel and high density alloys.

PARTING LINE PROPERTIES-The totally enclosed method of forging, eliminating a flash line, avoids flash line magnetic indications and the localizing effect of the flash grain on transverse, fatigue, and stress rupture properties.

Extreme service components for airframes, jet engines, guided missiles and a wide variety of other end uses are finding a solution in the Cameron split-die forging process. If you have a problem . . . call, write or come by

Cameron

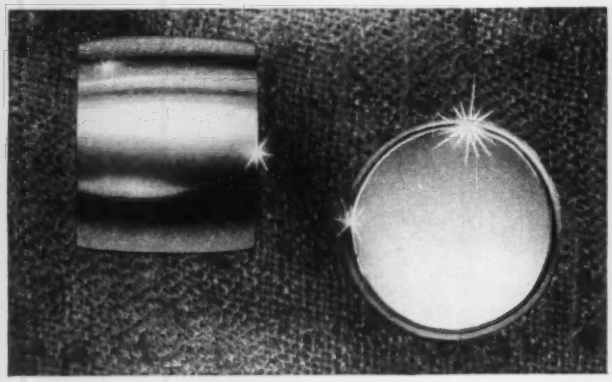
IRON WORKS, INC.

SPECIAL PRODUCTS DEPARTMENT
P. O. Box 1212, Houston, Texas

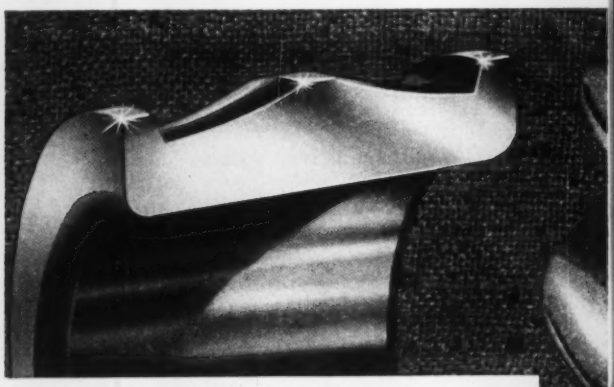
News! The best features of modern bearing design combined

Spherical

SELF-ALIGNING ROLLER BEARINGS BY LINK-BELT



BIG, HIGHEST-CAPACITY ROLLERS. Each bearing has a maximum number of rollers—as large as possible, yet all components are in optimum balance. Precision-ground to extreme accuracy, these convex rollers offer maximum economy for all applications.



HIGH, HEAVY INNER RACE FLANGES. Hefty inner race has sturdy shoulders which offer convenient hold for assembly and removal of bearing. They end problems of cutting away shaft or applying pressure at outer race . . . avoid any need to skimp on shaft shoulders.

BIG, mirror-smooth convex rollers *plus* heavy, broad-shouldered inner race *plus* centrifugally-cast bronze, precision-machined retainer! Only from Link-Belt do you get ALL that is best in bearing design.

Individually, these elements represent major improvements on accepted design concepts. Collectively, they constitute the most efficient spherical roller bearings available . . . promise unequalled economies, whatever the application. Men who know bearings will readily recognize new contributions to capacity, endurance and ease of maintenance.

For the good of your equipment, take time for a feature-by-feature comparison with any bearings you're now using. Your Link-Belt office or authorized stock-carrying distributor will gladly explain the many performance advantages evolved with this new design. And either can furnish full data on industry's most complete line of ball and roller bearings . . . pillow blocks and flanged, flanged cartridge, cartridge and take-up blocks.

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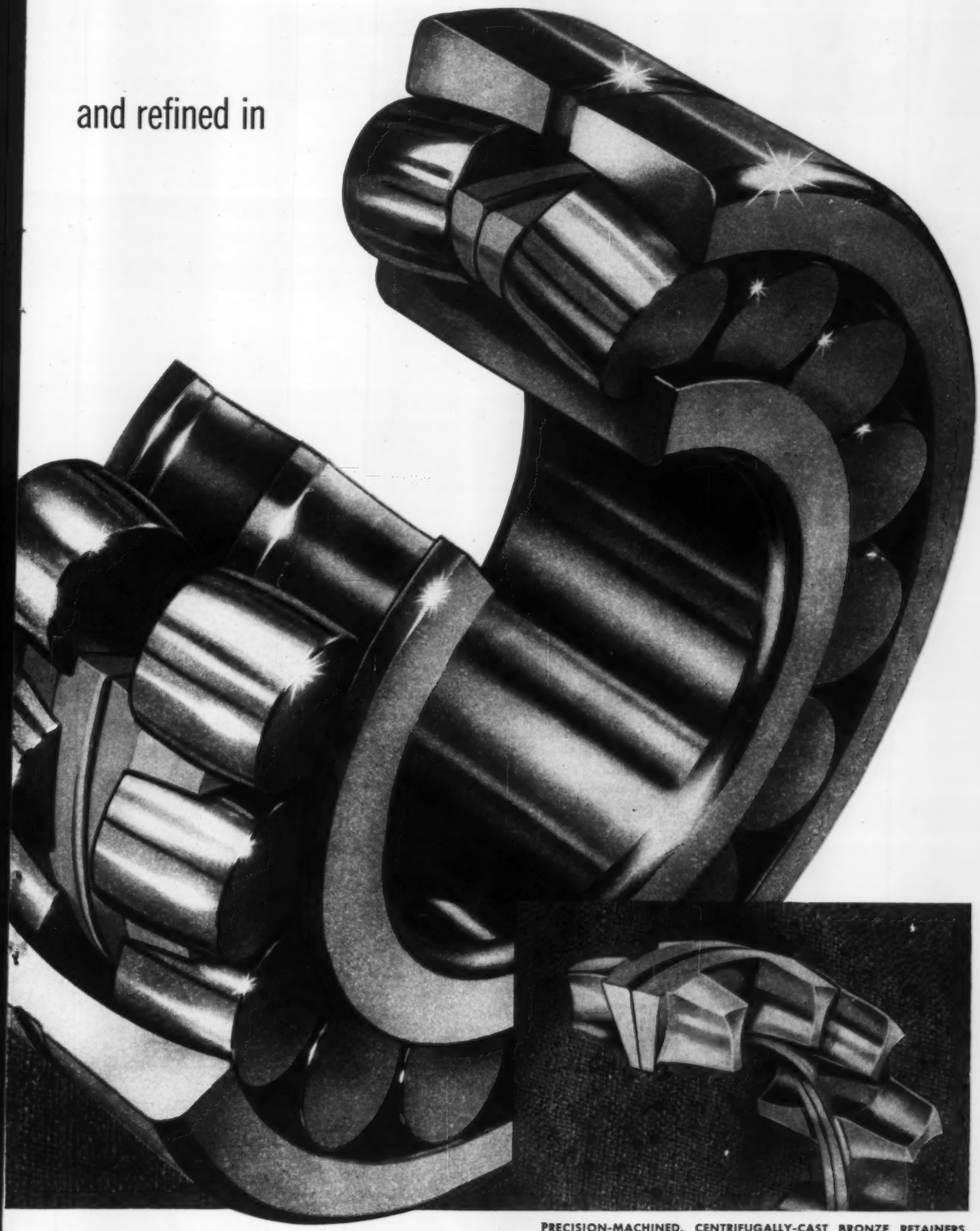
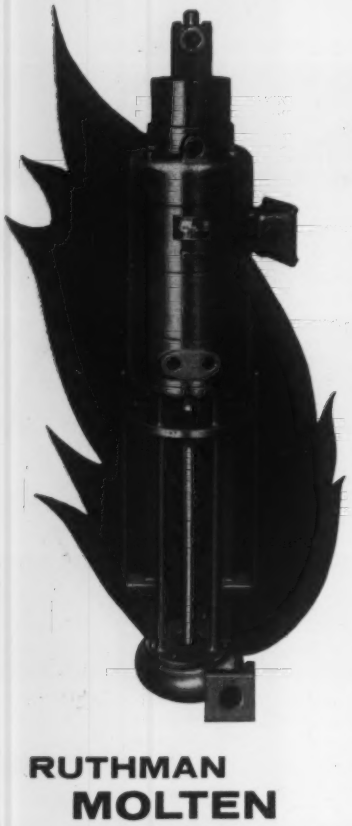
MANUFACTURER OF SELF-ALIGNING BALL AND ROLLER BEARINGS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Brazil, Sao Paulo; Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,818

and refined in



PRECISION-MACHINED, CENTRIFUGALLY-CAST BRONZE RETAINERS offer many times more support and ability to withstand high stress. They are not stampings—they space rollers accurately under extreme speeds and loads. Independent cage action for each row of rollers assures maximum bearing efficiency.



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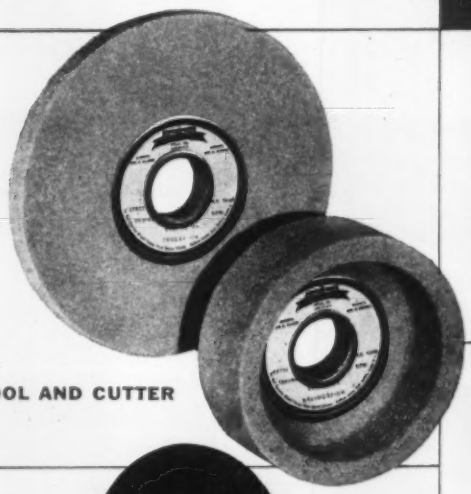

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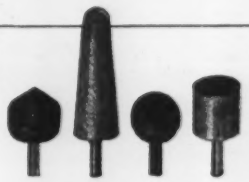

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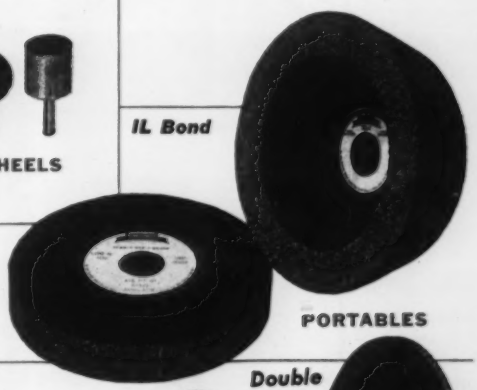

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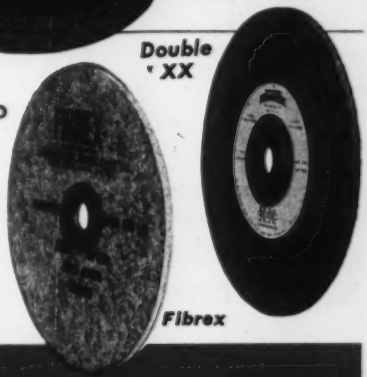

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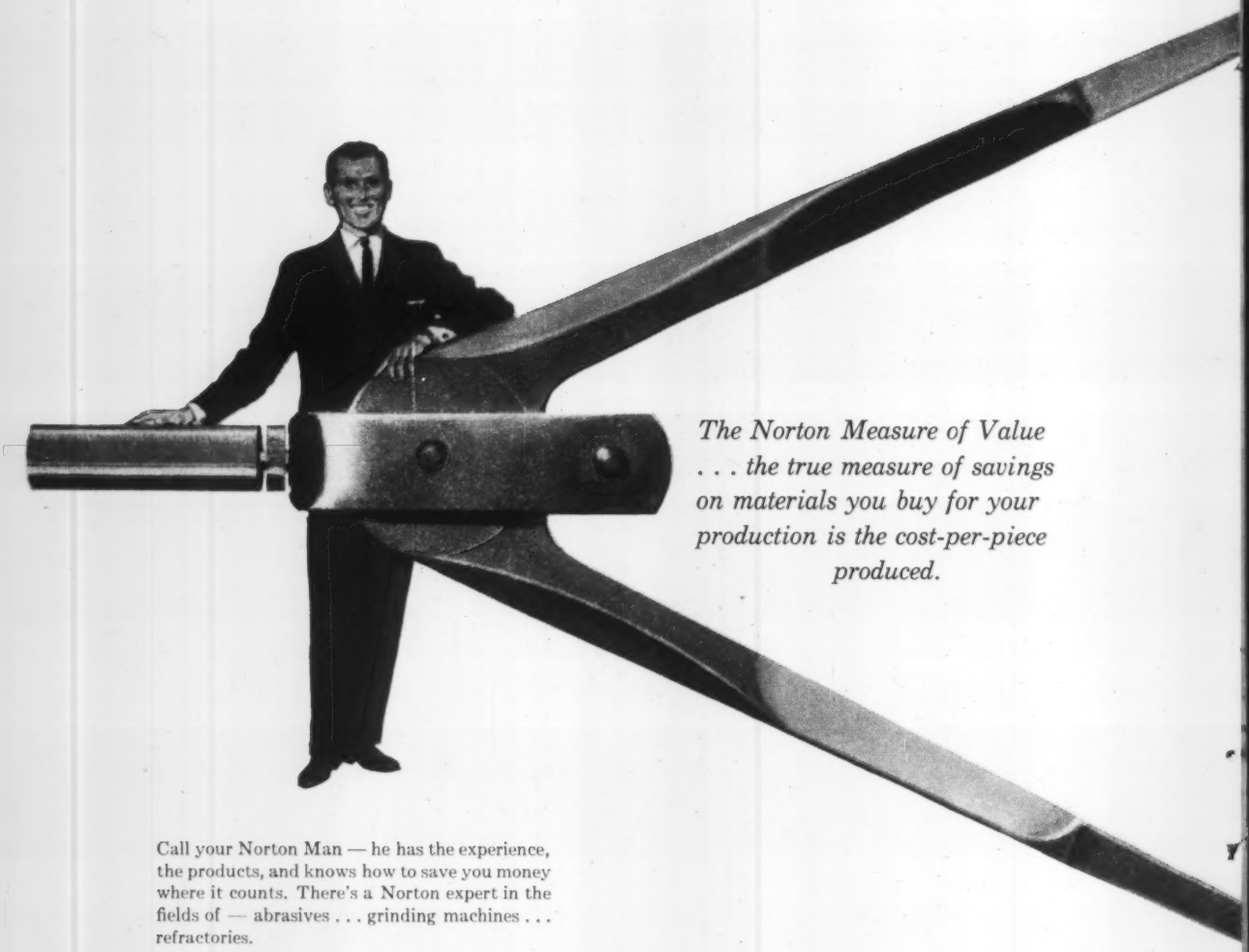

The Norton Measure of Value . . . the true measure of savings on materials you buy for your production is the cost-per-piece produced.

Call your Norton Man — he has the experience, the products, and knows how to save you money where it counts. There's a Norton expert in the fields of — abrasives . . . grinding machines . . . refractories.

You can produce greater savings than you can buy

The economic truth of the above statement applies to all manufacturing and is especially true in grinding wheels.

There are less expensive grinding wheels than Norton wheels — and on the invoice they may look like a bargain. But if the wheels purchased fail to perform efficiently on the production line or incur production delays because of poor quality or misapplication — a higher cost of production is the price actually paid.

In brief, *the true measure of grinding wheel value is not how much you paid for it — but how much you get from it. Here is what you can get from Norton —*

Norton Company gives you the most advanced research engineering and manufacturing facilities in the entire abrasive field — and you get this great scope of detailed knowledge on a personal basis — your Norton Man.

Your Norton Man starts his career by spending a minimum of 1 year in a carefully planned training course in the Norton plant and a comparable period of training in the field. The Norton Man has an average of 15 years abrasive experience in addition to the specialized training. He is the most knowledgeable man in abrasives that you can consult. He is your consulting abrasive engineer.

He will make a free Abrasive Requirement Study for you. This study lists the correct specifications for each abrasive job in your plant to assure you lowest cost-per-piece produced. He is also available for complete field testing on specific problems.

For example, your Norton Man can increase production by pointing out ways to better wheel usage and fewer wheel changes. He has the widest selection of grinding wheels in the industry to help him select the perfect wheel for new product grinding operations and improving your current grinding jobs — both at the lowest cost. And with Norton grinding wheels you can be sure of precise duplication order after order.

Norton offers true abrasive economy. Economy that pays off in lower cost-per-piece produced. Call your Norton Man. NORTON COMPANY, General Offices, Worcester 6, Massachusetts.

W-1891

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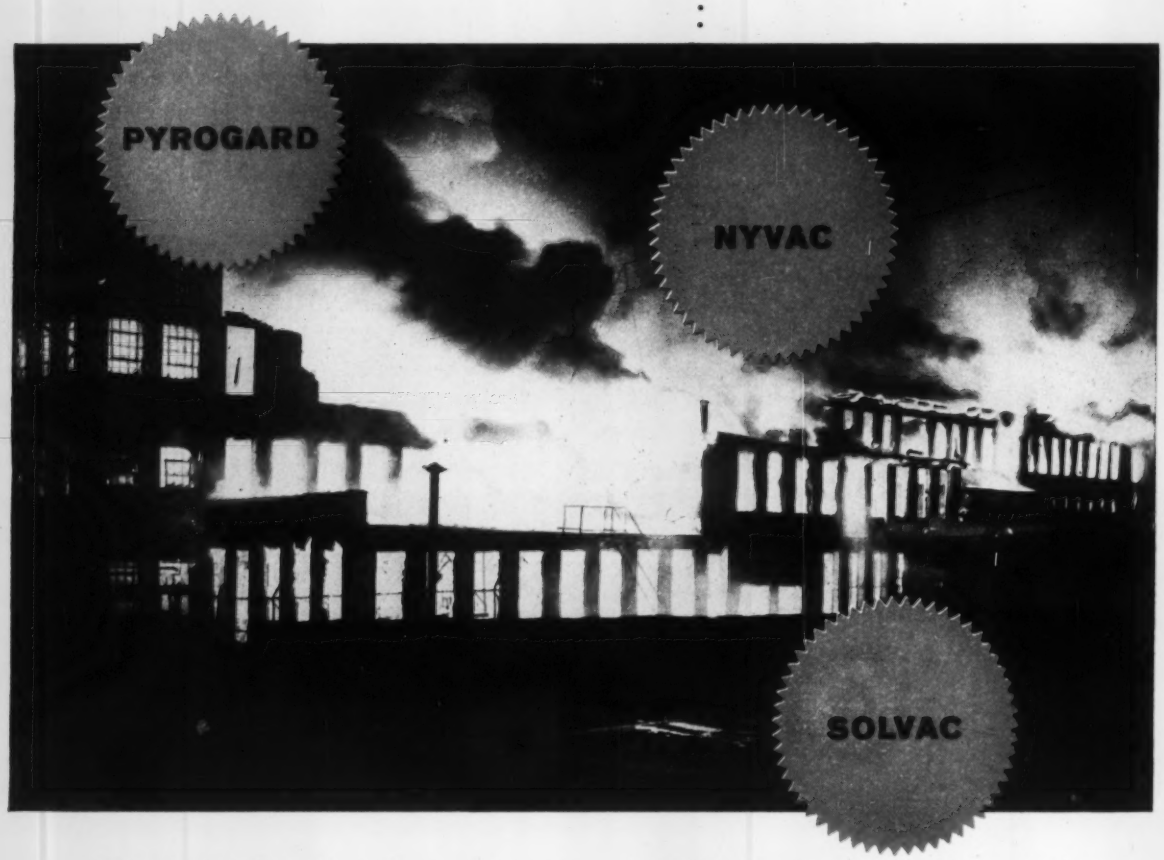
ABRASIVES

MAKING BETTER PRODUCTS TO MAKE YOUR PRODUCTS BETTER

New Low-Cost Fire Protection

Protect your personnel, property, production— with a Mobil Fire-Resistant fluid that exactly meets your needs!



If any of your hydraulic systems operate near a source of ignition you're in need of a fire-resistant fluid. There are three types to choose from: Straight Synthetic, Water Base Synthetics and Emulsions of Water and Oil. With the introduction of Pyrogard, Nyvac and Solvac . . . now Mobil can supply you with *all three types.*

Each type Mobil fluid is designed for a definite field of service. Used within its field, each Mobil fluid will maintain production levels, protect your hydraulic systems against wear and deposits, assure precise machine operation.

A Mobil engineer will analyze your plant's needs and recommend the most economical type of fire-resistant fluid. He will also help you eliminate expensive system leakage . . . help prepare system for this type of fluid . . . even help train your maintenance crew.

Call your Mobil representative for full details on Mobil fire-resistant fluids. It's the lowest-cost fire insurance you can buy!

For detailed brochure on Mobil Fire-Resistant Hydraulic Fluids, write on company letterhead to Socony Mobil Oil Company, Inc., Room 2060D, 150 E. 42nd Street, New York 17, N.Y.

Mobil **CORRECT LUBRICATION**

Another reason you're Miles Ahead with Mobil

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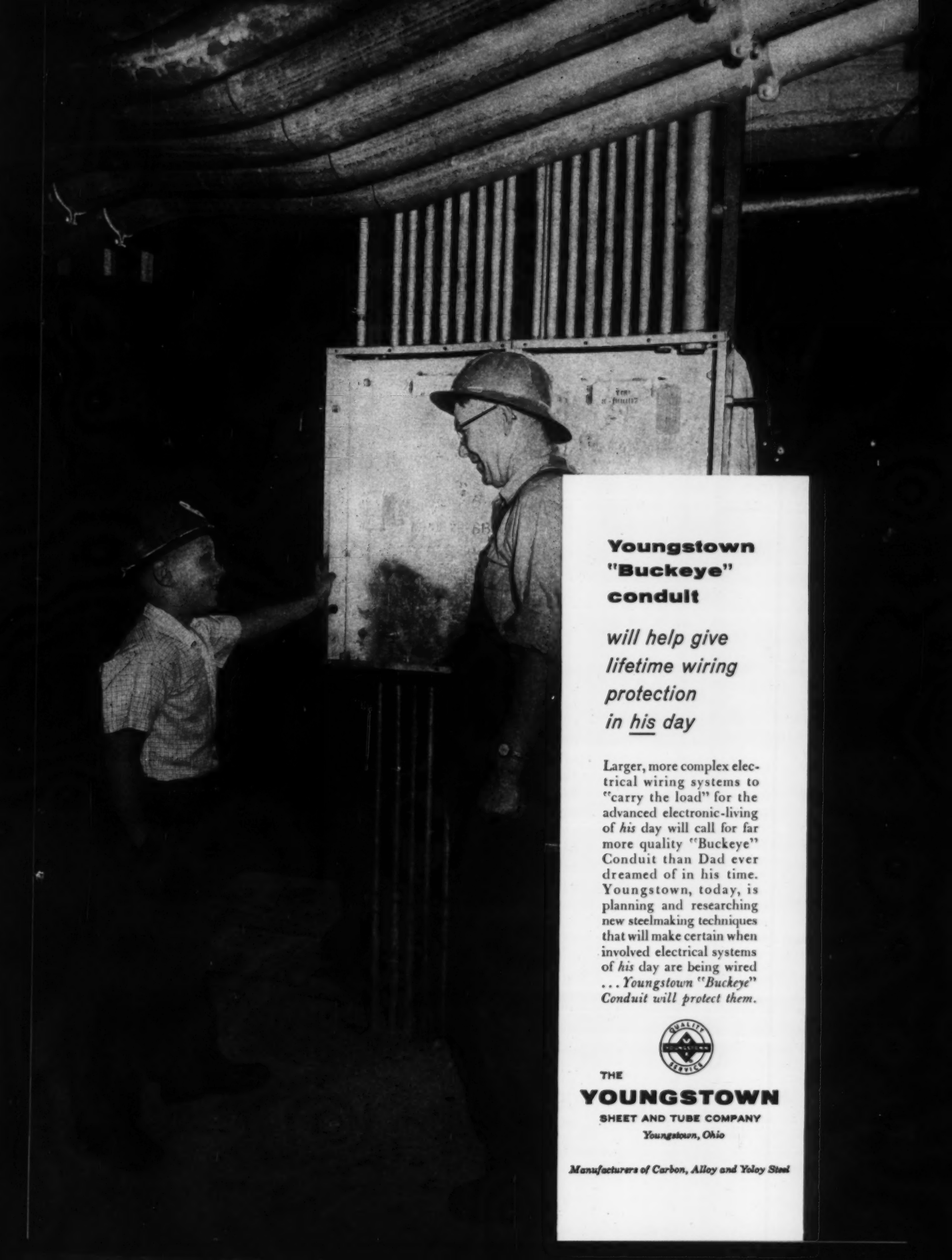


Youngstown "Buckeye" conduit

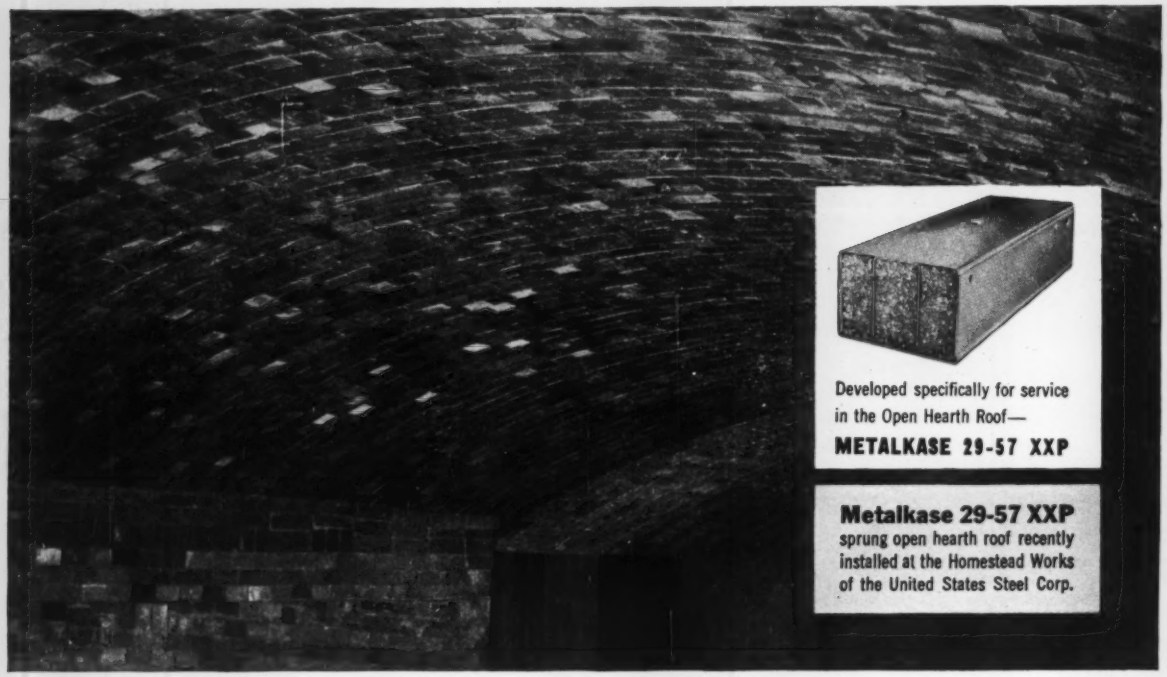
will help give lifetime wiring protection in his day

Larger, more complex electrical wiring systems to "carry the load" for the advanced electronic-living of *his* day will call for far more quality "Buckeye" Conduit than Dad ever dreamed of in his time. Youngstown, today, is planning and researching new steelmaking techniques that will make certain when involved electrical systems of *his* day are being wired ... *Youngstown "Buckeye" Conduit will protect them.*

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY
Youngstown, Ohio

Manufacturers of Carbon, Alloy and Yoloy Steel

Another HARBISON-WALKER
BASIC OPEN HEARTH ROOF
among the many making service and tonnage records



Developed specifically for service in the Open Hearth Roof—
METALKASE 29-57 XXP

Metalkase 29-57 XXP sprung open hearth roof recently installed at the Homestead Works of the United States Steel Corp.

Accelerated progress in open hearth steel furnace practice involving larger furnaces, increased use of oxygen and higher rates of production creates demands for superior refractories. With the all-basic open hearth furnace becoming an economical reality, the development of new refractories having decidedly enhanced properties has been necessary. Harbison-Walker conventional and specialized basic refractories are fully meeting these requirements.

A fundamental development in the achievement of the all-basic furnace is the metal encased basic brick pioneered more than forty years ago by Harbison-Walker. Through constant research and extensive application experience, rapid evolutionary progress has resulted in the successful use of the metal encased basic brick for open hearth roofs, as well as for other furnace parts.

METALKASE 29-57 XXP internally plated metal encased basic brick are used in both sprung and suspended open hearth roof constructions of all designs with excellent service records. An exceedingly important contributor to the excellence of this refractory, developed specifically for the purpose, is the high purity magnesia produced by Harbison-Walker from Michigan brines. Fully stabilized as periclase of high density, it is an important constituent of this refractory having outstanding properties for the particular application.

The successful use of basic brick for roofs contributes to greater severity of conditions imposed upon other furnace parts. Harbison-Walker basic refractory products long established with excellent records, together with the newer specialized brands fulfill these rigid requirements for bottoms—walls—and regenerator checkers and make **THE ALL-INCLUSIVE, ALL-BASIC** Open Hearth Steel Furnace a reality.

HARBISON-WALKER REFRACTORIES COMPANY
AND SUBSIDIARIES — GENERAL OFFICES: PITTSBURGH 22, PA.
World's Most Complete Refractories Service

CALENDAR
OF MEETINGS

Mar. 8-11, American Society of Mechanical Engineers: Gas turbine power conference and exhibit, Netherland-Hilton Hotel, Cincinnati. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

Mar. 9-10, International Acetylene Association: Annual meeting, Roosevelt Hotel, New Orleans. Association's address: 30 E. 42nd St., New York 17, N. Y. Secretary: L. G. Matthews.

Mar. 9-10, Steel Founders' Society of America: Annual meeting, Drake Hotel, Chicago. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

Mar. 9-12, American Society of Mechanical Engineers: Aviation conference, Statler-Hilton Hotel, Los Angeles. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

Mar. 9-13, National Association of Manufacturers: Institute on industrial relations, Hollywood Beach Hotel, Hollywood, Fla. Association's address: 2 E. 48th St., New York 17, N. Y. Institute's director: Sybyl Patterson.

Mar. 10, Society of American Military Engineers: Symposium on industry and defense, Penn-Sheraton Hotel, Pittsburgh. Information: Miss Mary Busch, Pittsburgh Post, Society of American Military Engineers, 925 New Federal Bldg., Pittsburgh 19, Pa.

Mar. 11-12, Instrument Society of America: Annual iron and steel conference, Pittsburgh. Information: R. E. Blackwell, Pittsburgh Section ISA, Box 1346, Pittsburgh 30, Pa.

Mar. 11-13, Pressed Metal Institute: Spring technical meeting, Pick-Congress Hotel, Chicago. Institute's address: 3673 Lee Rd., Cleveland 20, Ohio. Managing director: Harold A. Daschner.

Mar. 16-18, Society of Automotive Engineers: National passenger car, body, and materials meeting, Sheraton-Cadillac Hotel, Detroit. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Mar. 16-20, American Institute of Chemical Engineers: Winter meeting, Chalfont-Haddon Hall, Atlantic City, N. J. Institute's address: 25 W. 45th St., New York 36, N. Y. Secretary: F. J. Van Antwerpen.

Mar. 16-20, National Association of Corrosion Engineers: Annual conference and exhibit, Sherman Hotel, Chicago. Association's address: 1061 M&M Bldg., Houston 2, Tex. Secretary: T. J. Hull.

Complete DRILLING

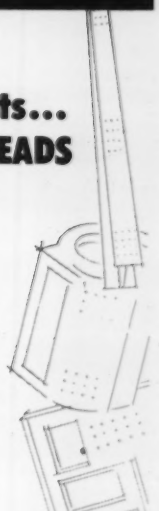
versatility

for the "cumbersome" parts... with U. S. DRILL HEADS

Is your drilling *accurate and economical* in structural steel, tube sheets, flue sheets, and other large, cumbersome parts? It will pay you to check into a U. S. Drill Head installation on your radial drill!

Style U Universal Joint Adjustable Heads equipped with Air Counterbalance and 360° Ball Bearing Swivel Attachment give added versatility to any radial drill. Quick setup with positive lock of swivel in aligned position. Fast and accurate operation with minimum operator fatigue.

Select the *right* head for your jobs from the many sizes of Style U Heads. You'll get lots of cost-reducing features.



- ☐ Full ball bearing mounting of shafts
- ☐ Shaved gears throughout
- ☐ Exclusive quick-change neoprene-sealed universal joints
- ☐ Heavy duty spindle assemblies
- ☐ Adjustable-arm spindle mounts, or special bored Slip Spindle Plates
- ☐ Oil-tight, high-strength cast housings

Write for descriptive literature, or ask for recommendations on your particular multiple drilling problems.

US DRILL HEAD

Adjustable and Fixed Center Multiple Drilling Heads. Individual Lead Screw Multiple Tapping Heads.

UNITED STATES DRILL HEAD CO.

BURNS STREET • CINCINNATI 4, OHIO

BEARING TIPS
by McGill

McGILL sealed GUIDEROL® bearings preserve high capacity performance of needle bearing applications

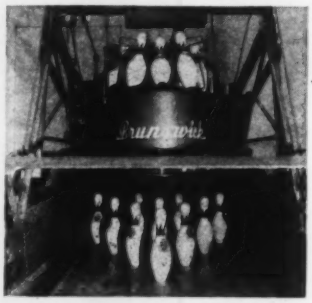
Lip type contact seals built into GUIDEROL bearings insure longer life for their high capacity performance in limited radial space. It's simpler and less costly to apply these sealed bearings than build in auxiliary seals that increase bearing width and housing requirements.

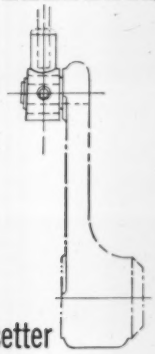
GUIDEROL bearings, including the sealed series, are precision built and combine the inherent high capacity of full complement roller bearings with the control of center guided rollers. This recommends the bearing for applications too heavily loaded for retainer type bearings, but where shaft deflection and misalignment prevents the use of ordinary full type roller bearings.

Seals keep contamination out and lubrication in. This assures trouble free performance where maintenance is costly or impractical.

Sealed GUIDEROL minimizes torque in ACF "Piggy-Back" trailer hitch

McGILL Sealed GUIDEROL bearings meet the requirements of a high capacity needle bearing for small radial space, having adequate seals to prevent entry of foreign materials and loss of lubricant in this exposed application. The bearings, in the elevating arms, minimize the amount of torque required to elevate the trailer hitch and jack the trailer off the car floor. The hitch, manufactured by American Car and Foundry Division of ACF Industries Incorporated, is a tiedown and cushioning unit for semi-truck trailers on flat car (Piggy-back) use. Although speeds are low, loads are as high as 20,000 lbs. per bearing. Grease relubrication when desired is applied through the shaft to the inner race of the bearing.



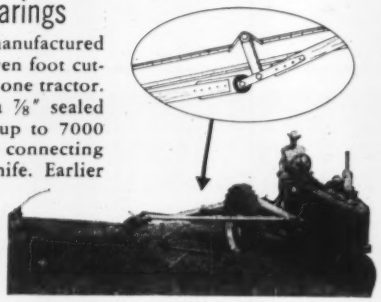


"Trouble-free" performance of automatic pinsetter called for Sealed GUIDEROL bearings

Prelubricated and Sealed GUIDEROL bearings are used in two applications in BRUNSWICK AUTOMATIC PINSETTERS; on the Rake Crank Lever Assembly and on the Jogger Arm Assembly. The photo shows the location of the sealed GUIDEROL Rake Crank Lever application in the "mechanical brain" of the machine. The sealed GUIDEROL bearings help keep the "brain" highly efficient, with a minimum of maintenance. In the Rake Crank they are not relubricated and operate indefinitely on retained lubricant. Effective seals keep out dirt and foreign matter.

New mower design takes high cutting loads on Sealed GUIDEROL bearings

These unusual field mowers manufactured by Kosch Mfg. Co. use two seven foot cutting bars for a 14 foot cut with one tractor. The second bar depends on a 7/8" sealed GUIDEROL bearing to carry up to 7000 pound loads produced in the connecting drive for the reciprocating knife. Earlier sleeve and lower quality needle bearings were discarded for sealed GUIDEROL bearings that have prevented costly field breakdowns.



engineered electrical products

McGILL®

precision needle roller bearings

SEND FOR CATALOG No. 52-A

MULTIROL — GUIDEROL — CAMROL

McGILL MANUFACTURING COMPANY, INC., BEARING DIV., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

A new opportunity for machining cost reductions...

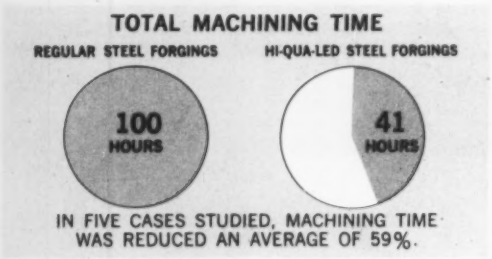
If your ratio of machining cost to stock cost is more than 1 to 1, you can profit by using...

ALCO'S HI-QUA-LED STEEL FORGINGS

ALCO's easy-to-machine Hi-Qua-Led Steel® forgings are speeding up production and cutting costs on machining jobs throughout industry. While retaining all the desirable mechanical properties of regular steel in any AISI grade, ALCO's special-process leaded steel forgings provide opportunities for significant cost reductions in three important areas: machine time, tooling and surface finish.

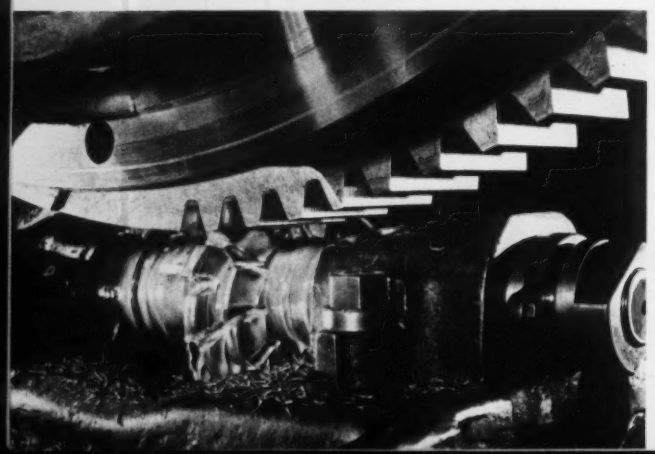
COST REDUCTION NO. 1

HI-QUA-LED STEEL REDUCES MACHINE TIME

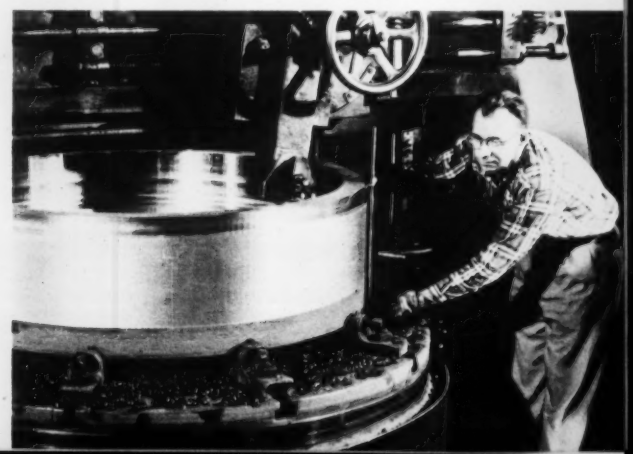

TOTAL MACHINING TIME
REGULAR STEEL FORGINGS
HI-QUA-LED STEEL FORGINGS
100 HOURS
41 HOURS
IN FIVE CASES STUDIED, MACHINING TIME WAS REDUCED AN AVERAGE OF 59%.

The lead additive in ALCO's Hi-Qua-Led Steel forgings tends to lubricate the cutting action of tools. This permits heavier cuts and higher cutting speeds for faster removal of metal. As a result, many users have made significant cost reductions by cutting machining time more than 50%.

8-HOUR JOB DONE IN 3—One manufacturer reports that roughing and finishing a gear formerly required 8 hours and 8 minutes. With the freer machining Hi-Qua-Led Steel and the increased speeds it permits, the job is now done in 3 hours.



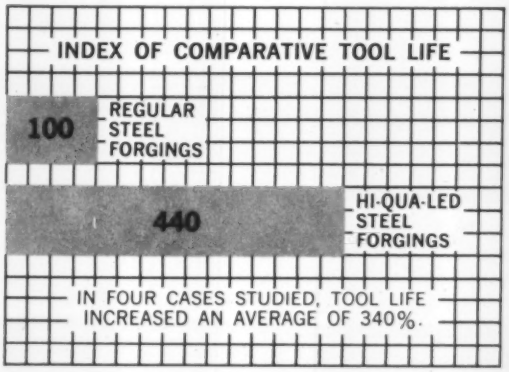
TOOL DOES 3-TIMES THE WORK—Lower frictional properties of Hi-Qua-Led Steel forgings enable another manufacturer to obtain 10 pieces per tool grind as compared to 3 pieces with non-leaded steel. And surface finish is also greatly improved.



ALCO

COST REDUCTION NO. 2

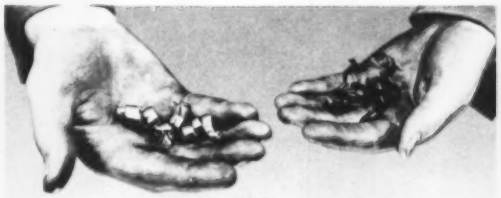
HI-QUA-LED STEEL INCREASES TOOL LIFE


INDEX OF COMPARATIVE TOOL LIFE
100
REGULAR STEEL FORGINGS
440
HI-QUA-LED STEEL FORGINGS
IN FOUR CASES STUDIED, TOOL LIFE INCREASED AN AVERAGE OF 340%.

The reduced friction characteristic of Hi-Qua-Led Steel forgings also provides outstanding opportunities for increased tool life. Leading manufacturers report increases of 200%, 700%, even 1600%. With friction sharply reduced, tools operate at lower temperatures. As a result they cut more efficiently, require fewer grinds, and tool breakage is practically eliminated.

COST REDUCTION NO. 3

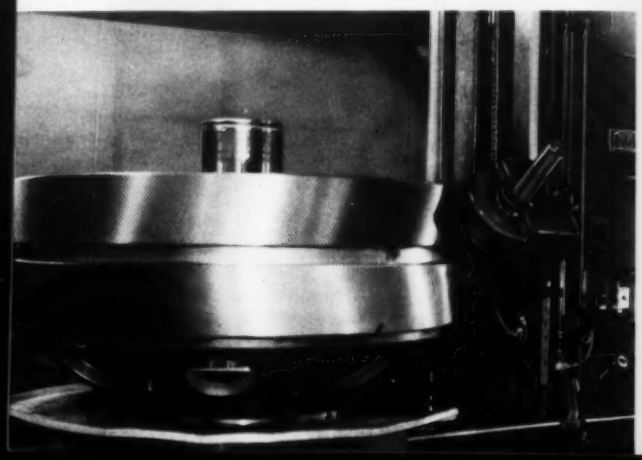
HI-QUA-LED STEEL GIVES SUPERIOR SURFACE FINISHES



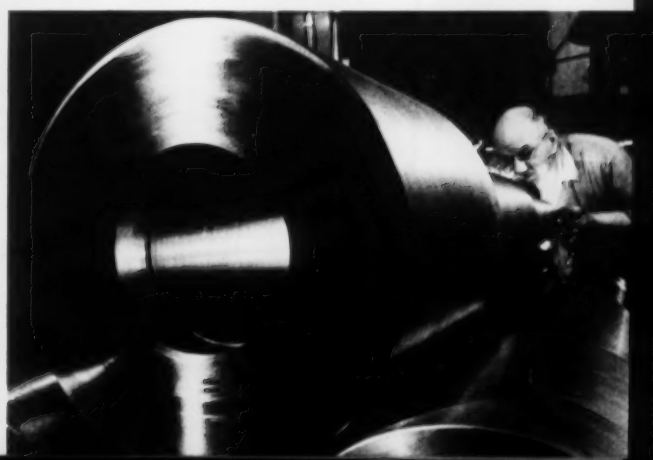
IN ALL CASES STUDIED, SURFACE FINISH WAS GREATLY IMPROVED

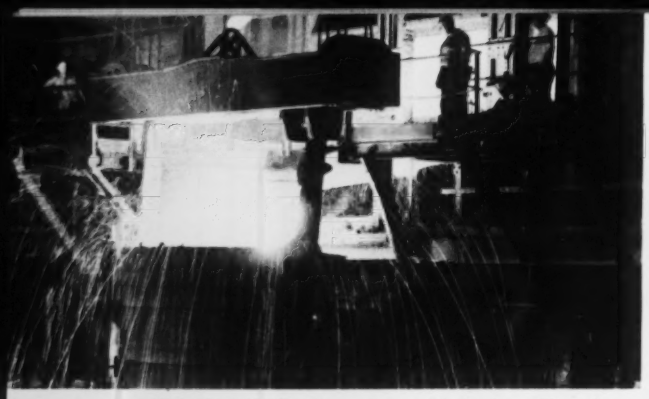
ALCO's Hi-Qua-Led Steel forgings assure cleaner cuts and better chip formation resulting in much smoother surface finishes. For some jobs a roughing tool may be used to obtain the desired finish. This superior machinability also assures much closer tolerances.

SAVES FULL WORK WEEK—The improved machining qualities of Hi-Qua-Led Steel forgings have reduced gear cutting time for another manufacturer. A job that formerly required 65 hours is now completed in 25, thus saving a full work week.

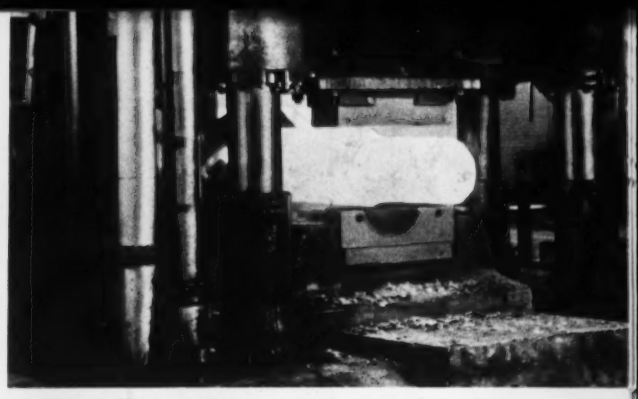


TOOL LIFE EXTENDED 700%—In a trepanning operation, a manufacturer reports tool life increased from one to eight pieces with Hi-Qua-Led Steel forgings. Tools operate at greatly reduced temperatures and provide better chip formations.

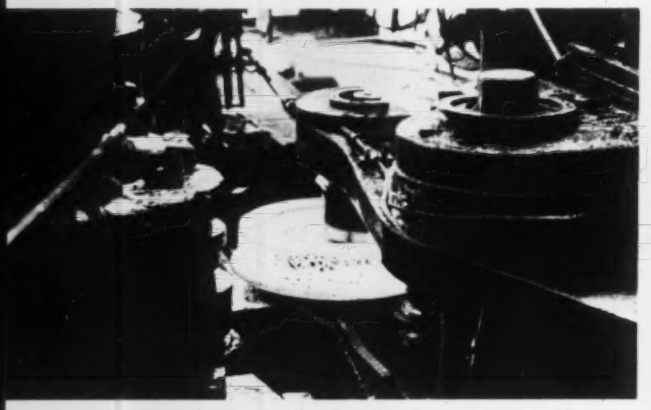




STEELMAKING—To assure highest-quality forgings, ALCO makes its own steel—to customer specifications—in either regular or Hi-Qua-Led grades, or austenitic stainless.



FORGING—With uniform temperatures throughout, ALCO ingots are forged to rigid standards of forging reduction for proper grain refinement and dense, uniform structure.



ROLLING—Hundreds of different rolls make possible an almost unlimited variety of cross-sections for ALCO ring forgings. Mandrelled ring forgings are also available.

MACHINING—ALCO forgings are normally supplied in rough-machined condition but can be shipped finish-machined if specified. ALCO makes shafts up to 40-ft long, rings up to 12-ft in diameter.

FROM STEELMAKING...THROUGH ROUGH MACHINING
ALCO BUILDS QUALITY INTO EVERY FORGING

Completely integrated production means better quality control. That's why ALCO *makes its own steel*...and why you are assured a quality forging in exact conformance to your specifications, whether regular or Hi-Qua-Led Steel.

If your ratio of machining cost to stock cost is more than one to one, you can't afford *not* to investigate the advantages of Hi-Qua-Led Steel. Your ALCO representative will be glad to arrange for a test on your own machines.

Contact your nearest ALCO sales office or write for complete information to: ALCO Products, Inc., Dept. 156, Schenectady, N. Y.

SIZES AVAILABLE

Open die forgings—rectangular
Maximum width—32 in.
Maximum height—32 in.
Maximum length—40 ft
Maximum weight—36,000 lb
Minimum weight—1,000 lb

Open-die forgings—rounds
Maximum OD—36 in.
Maximum length—40 ft
Maximum weight—36,000 lb
Minimum weight—1,000 lb

Mandrelled ring forgings
Maximum OD—82 in.
Minimum OD—24 in.
Maximum width—60 in.

Rolled ring forgings
Maximum OD—145 in.
Minimum OD—18 in.
Maximum width—24 in.

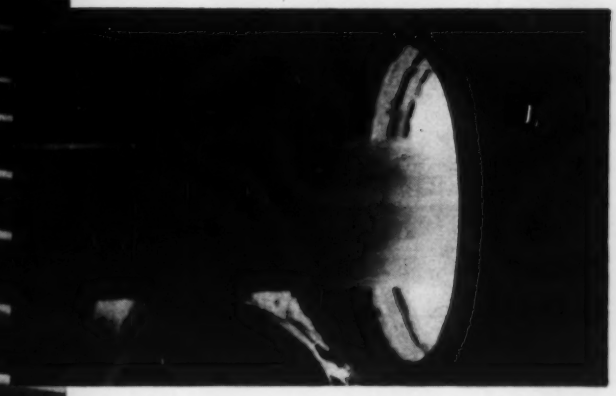
ALCO

ALCO PRODUCTS, INC.
NEW YORK
SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES · DIESEL ENGINES · NUCLEAR REACTORS · SPRINGS · STEEL PIPE · FORGINGS · OIL FIELD EQUIPMENT

"GAS gives us the controllability, cleanliness, economy and speed we demand"

A. O. Smith Corporation



Lengths of oil well casing are in production at the A. O. Smith Corporation in Milwaukee. They are being stress relieved in a gas furnace.

Gas has proved best on A. O. Smith's production line because of its cleanliness, controllability, speed and economy. Gas gives nearly 50% reduction in cost over their previous fuel, and carbon spots have been eliminated. There are three pre-heat furnaces that heat the pipe to 1650°-1750°, depending on the size of pipe. Three re-heat furnaces bring the temperature back up before quenching.

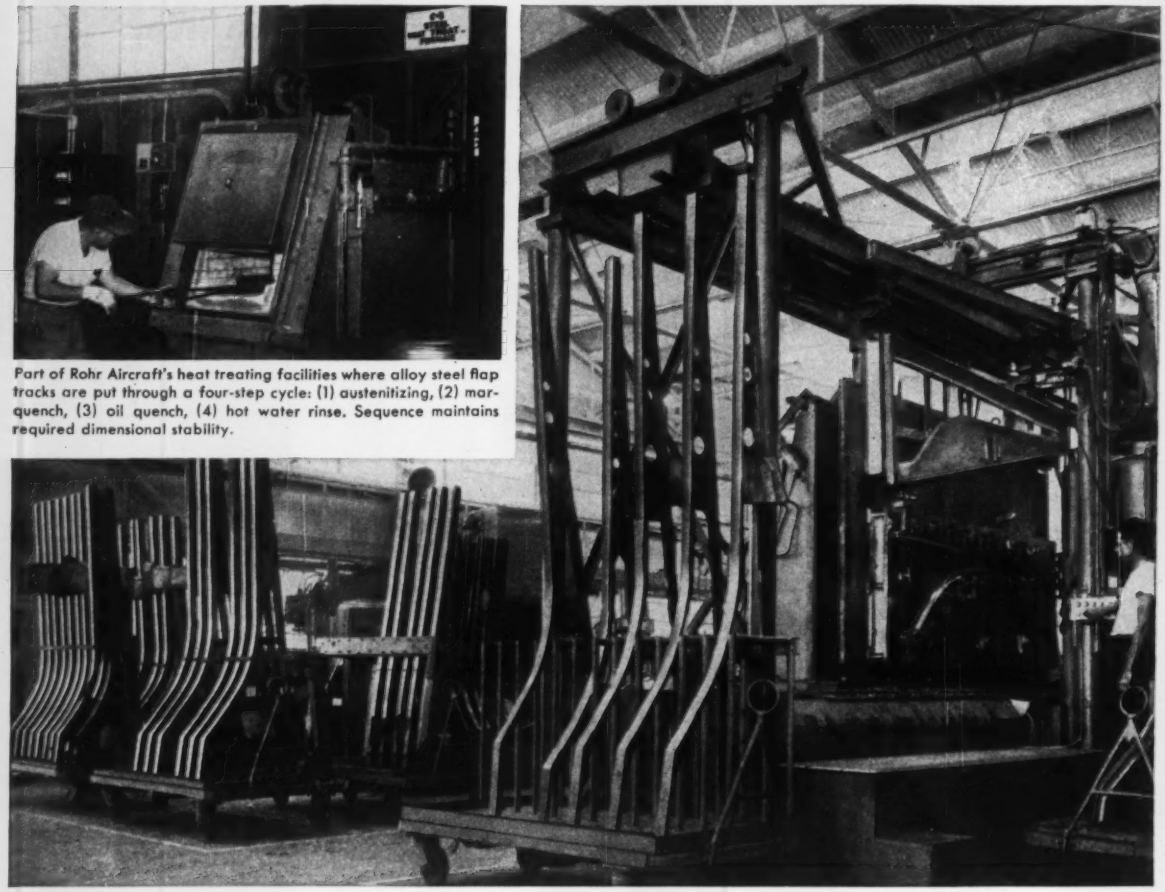
A. O. Smith also produces auto frames, pressure vessels, glass lined farm storage units and tanks, glass-lined gas water heaters and furnaces. Throughout their operations, gas is installed as an integral, indispensable part of their production lines.

For information on how gas can help you in your production operations, call your gas company's industrial specialist. He'll be glad to discuss the economies and superior results you get with modern gas industrial equipment. *American Gas Association.*

Problem-Solving Products from Republic

Increase Strength/Weight Ratios, Cut Costs, Save Weight, Maintain Dimensional Stability

Part of Rohr Aircraft's heat treating facilities where alloy steel flap tracks are put through a four-step cycle: (1) austenitizing, (2) marquench, (3) oil quench, (4) hot water rinse. Sequence maintains required dimensional stability.



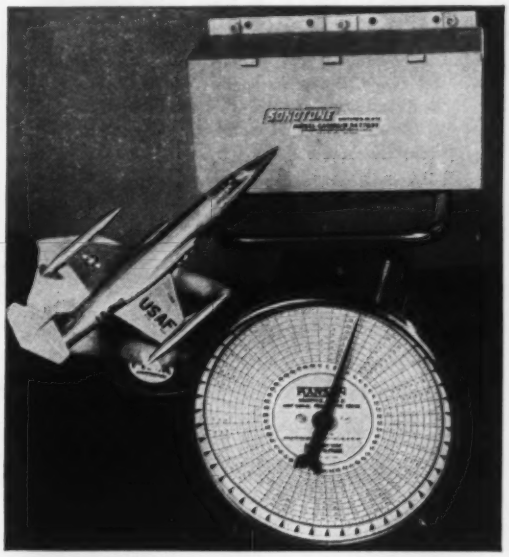
ALLOY STEEL MEETS HIGH STRENGTH, PRECISION REQUIREMENTS IN USAF BOMBERS. Steel weldments produced by Rohr Aircraft Corporation, Chula Vista, California, are an excellent example of the aircraft industry's constant effort to develop better and more economical methods of mass-producing large, high-strength structural aircraft components.

Rohr is currently using this weldment technique in manufacturing flap tracks for an Air Force bomber. The flap tracks are fabricated from AMS 6428 Alloy Steel, a type supplied by Republic. This fine steel provides a minimum tensile strength of 180,000 psi in the heat treated condition. Uniform response to heat treatment assures exceptionally good deep hardening characteristics—plus hard, wear-resistant surfaces.

The exceptionally high strength-to-weight ratio of Republic Alloy Steel combined with the highest strength values permits the design of thinner, lighter track sections to save weight and hold down size without sacrifice of strength or safety.

Rohr's development of specialized tooling, welding, and heat treating techniques permits the production of these alloy steel weldments to close tolerances—a rigid aircraft engineering requirement. Costs are reduced by eliminating the need for expensive equipment and excess stock removal.

Specify Republic Alloy Steel for your parts that must be tough, strong, dependable. Our metallurgists are always available to help you in selection and processing. The coupon is your invitation to use this obligation-free service.



REPUBLIC STAINLESS STEEL, Type 302, cuts costs, saves weight, resists corrosion in jet aircraft storage battery cases made by Sonotone Corporation, Elmsford, New York. Stainless steel's exceptionally high strength-to-weight ratio and ability to withstand impact and vibration permits the use of a lighter gage, thus saving weight. Sonotone reports the metal's outstanding corrosion-resistance eliminates the need for painting the cases with no detrimental effect on service or appearance. Republic Stainless Steel also resists the wide extremes of temperature and atmosphere through which the batteries must operate. Mail the coupon for more facts on Republic ENDURO® Stainless Steel.

REPUBLIC'S NEW HIGH STRENGTH POWDER, TYPE H.S. 6460, opens the way for sinterings for highly stressed parts in aircraft and missiles. Type H.S. 6460 can be used with existing operating equipment. It provides a minimum tensile strength of 60,000 psi at 6.4 density as sintered, and 100,000 psi heat treated. Type H.S. 6460 maintains its dimensional characteristics after sintering—less than .004 inches per inch shrinkage from die size at 6.4 density. Available in production quantities up to and including 12 tons, or multiples thereof. Mail coupon for technical data sheet on Type H.S. 6460 Powder.

REPUBLIC TITANIUM ALLOYS are used for weight saving and elevated temperature applications in the B-58 Hustler. The supersonic bomber is built for the Air Force by Convair, a division of General Dynamics Corporation, Fort Worth, Texas. These particular titanium alloys have minimum tensile strength of 130,000 psi and a minimum yield strength of 120,000 psi. Among the strongest alloys now being produced, they meet the demand for high strength to resist the effects of aerodynamic heating in supersonic aircraft, such as the B-58. Republic metallurgists and engineers, pioneers in the development of high strength-to-weight metals, are ready to help you apply titanium to your product or process.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. ST-5531-A
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Have a metallurgist call.
☐ Alloy ☐ Stainless Steel
☐ Metal Powder ☐ Titanium

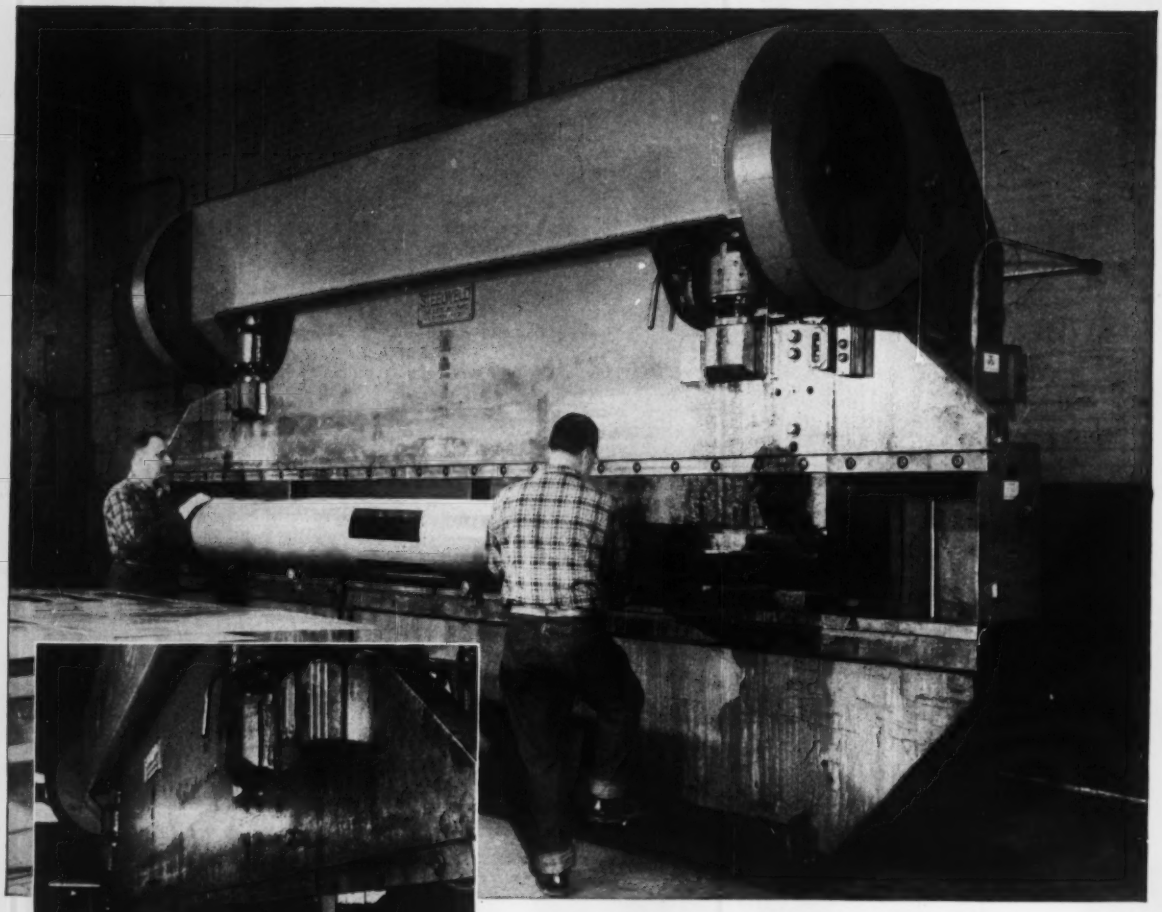
Send more information on these Republic products:
☐ Alloy Steel ☐ Stainless Steel
☐ Type H.S. 6460 Powder ☐ Titanium

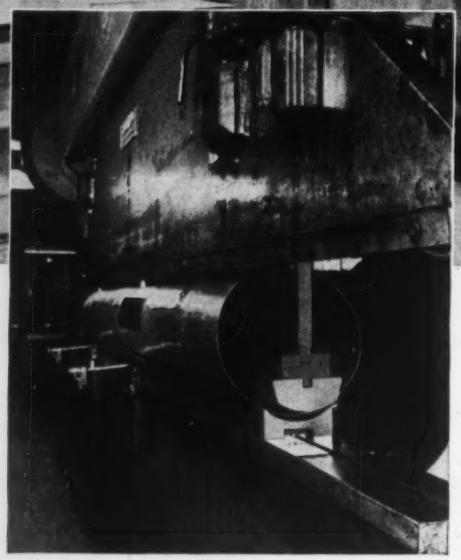
Name_____ Title_____
Company_____
Address_____
City_____ Zone____ State_____

COMBINE AUGER TUBES

25 to 50 Made Per Hour at Massey-Harris-Ferguson, Ltd.

Steelweld Brake in service since 1950. Bed and ram are 18'-0" long including 2'-0" extensions at both ends. Bending capacity rated at 12' x 3/16".





Flat metal is quickly formed into a cylinder by a series of pressure contacts with this die arrangement.

AUGER tubes for combines made at Massey-Harris-Ferguson, Ltd., Toronto, are produced at rates of 25 to 50 per hour, depending upon conditions, with a Steelweld Brake. The tubes are from 10 to 16 feet long and made of 16 gauge steel.

This job represents one of a multitude performed at low cost on this brake, which is used for many bending and metal-forming operations required for the various farm implements built by Massey-Harris-Ferguson.

Steelwelds are popular with farm machinery manufacturers and have been serving many for years. They perform accurately, keep going continuously on long production runs without need of frequent adjustments, tinkering and maintenance. They are easy and safe to operate. Dies are quickly changed.

Because Steelweld Brakes are heavily built machines loaded with features that will help you, it will be to your interest to give them serious consideration when additional brakes are needed.

STEELWELD
PRESS BRAKES

Write for free copy of Catalog No. 2010
Gives construction and engineering details

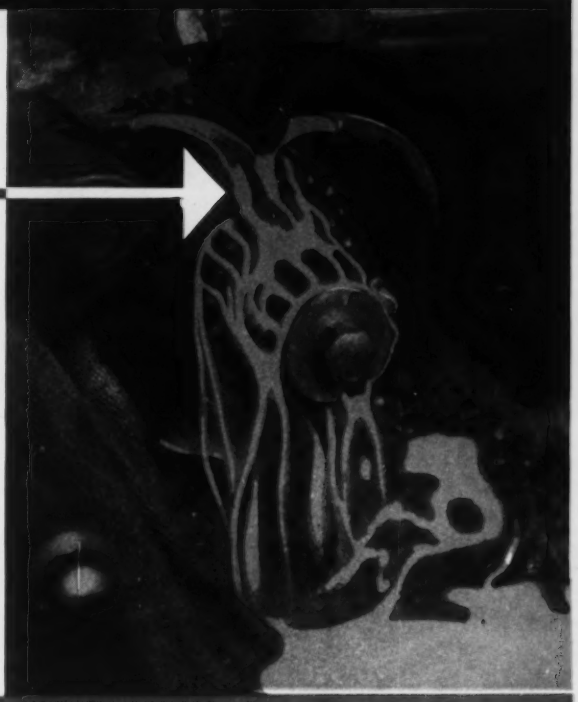
STEELWELD DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 7868 E. 281 ST. • WICKLIFFE, OHIO

a "NEW LEAF" in coolants... New 100% Chemi-Cool HOCUT cools... lubricates... prevents rust... stays mint-fresh for life!

At the point of proof

NEW HOCUT 237

rests its case!



Industry's newest synthetic cutting fluid—new HOCUT 237—was just introduced within the past year. Yet, in these few months it has proved itself one of the most versatile, effective and economical coolants ever to appear on the metal-working scene.

Already our files are filling with proven case histories* of new savings and new efficiencies our customers are getting with new HOCUT 237. Here are some of the reasons why this unique new all-chemical coolant has earned such quick acceptance:

*yours on request

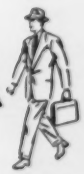
- **Permanently odor-free**
  Needs no "additive" to stay clear and fresh-smelling for life. Cannot turn rancid or harm hands. Keeps your shop clean and your operators happy.
- **Cools work and tools quickly**
  Faster cooling speeds machining time—prevents welding and chip build-up, and increases tool life.
- **A lubricant that works**
  The secret is in a new synthetic high-molecular-weight lubricity additive—which, in plain language, means all the lubrication advantages of a "soluble oil"—with none of the disadvantages.
- **Protects tools and work from rust**
  Work coming off the machine is coated with a two-stage rust preventive. Tools, ways, slides and bearings get real protection.
- **Best for economy**
  Initial cost is only a few pennies per gallon in the machine. Expense of clogged filters is eliminated and filtration speeded up. HOCUT can be used and re-used for months. Disposal is never a problem.

You can get all these benefits of new HOCUT 237 in your own plant by calling your Houghton representative today. Or write: E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

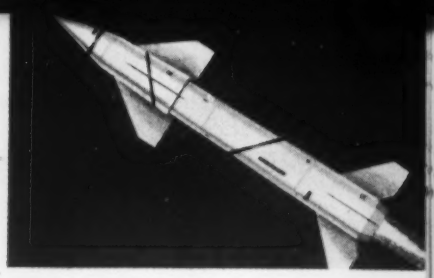
HOCUT 237 ... *a product of*

E. F. HOUGHTON & CO.

PHILADELPHIA • CHICAGO • DETROIT • SAN FRANCISCO • TORONTO



Ready to give you on-the-job service



predictable performer . . .

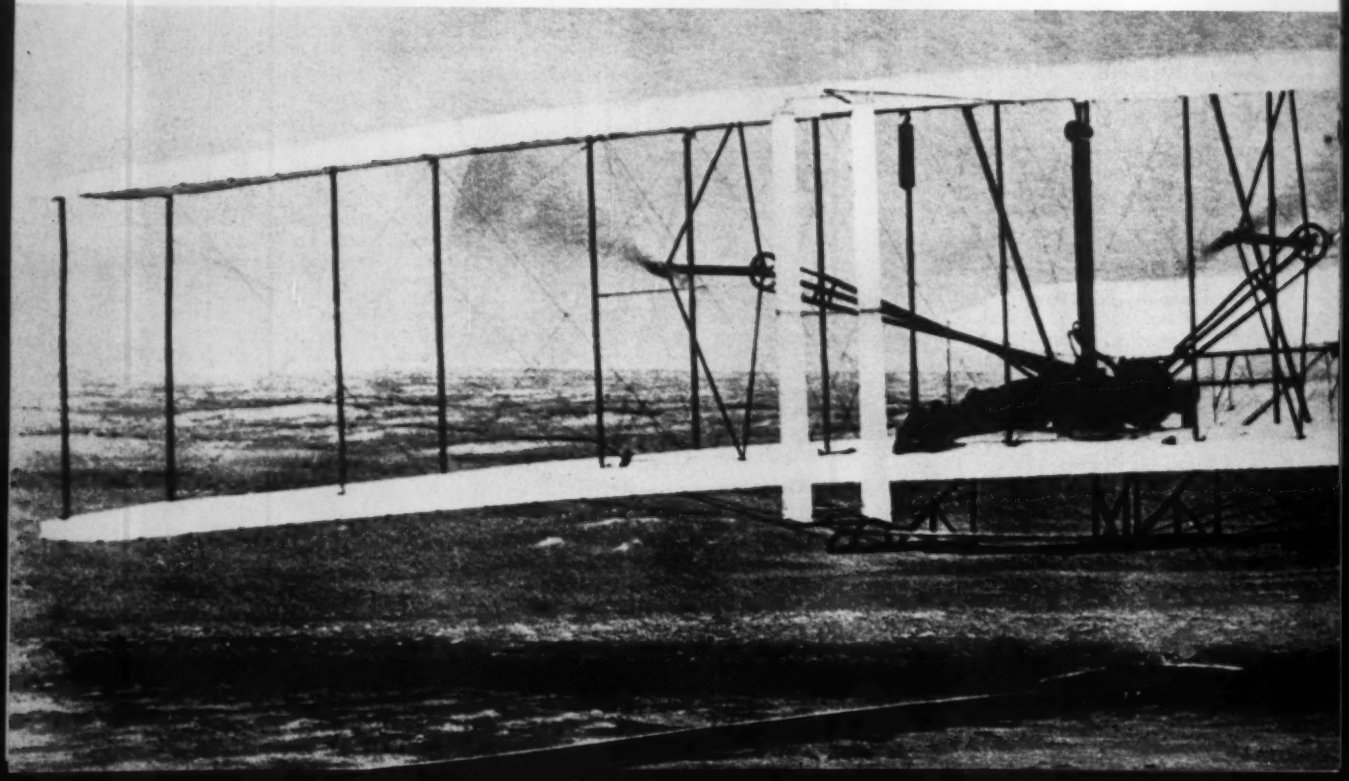
. . . but few believed it until Wilbur and Orville Wright proved it in 1903. Later, Lindbergh—staking his life on the same *predictable performance* first proved possible by the Wrights—flew alone, non-stop across the Atlantic.

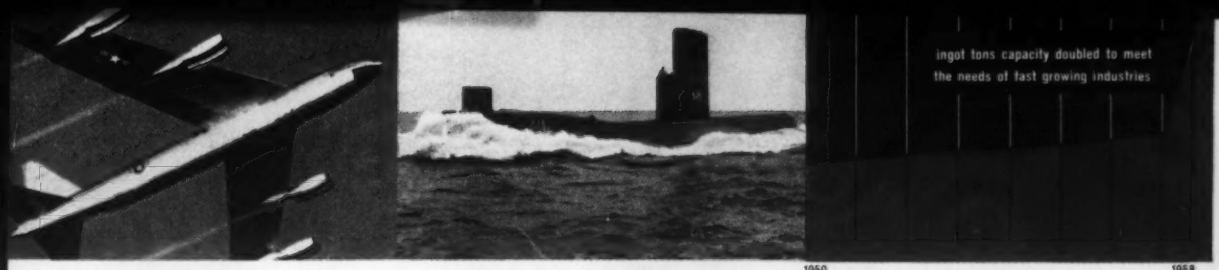
The answer in both cases . . . and still the best answer for today's mighty jets and star-bound missiles . . . vital aircraft components made from uniform, dependable *Carpenter steels.*

The secret of *predictable performance* is in absolute and precise quality control . . . controls first developed in *Carpenter* Laboratories that are now standards for the industry: the Torsion Impact Test, Acid Disc Inspection, Cone Test, the Tough Timbre Test . . . to name a few.

Today, the *Carpenter* MEL-TROL® process—a unique control that utilizes a new, patented ingot mold design—produces steels that approach the ultimate in *predictable performance.*

With this leadership in quality—goes the responsibility of meeting constantly growing demands of the atomic age—more stainless, more tool steels, more specialty alloys. For a company whose history was based on *quality* rather than *quantity*, this was quite a challenge.





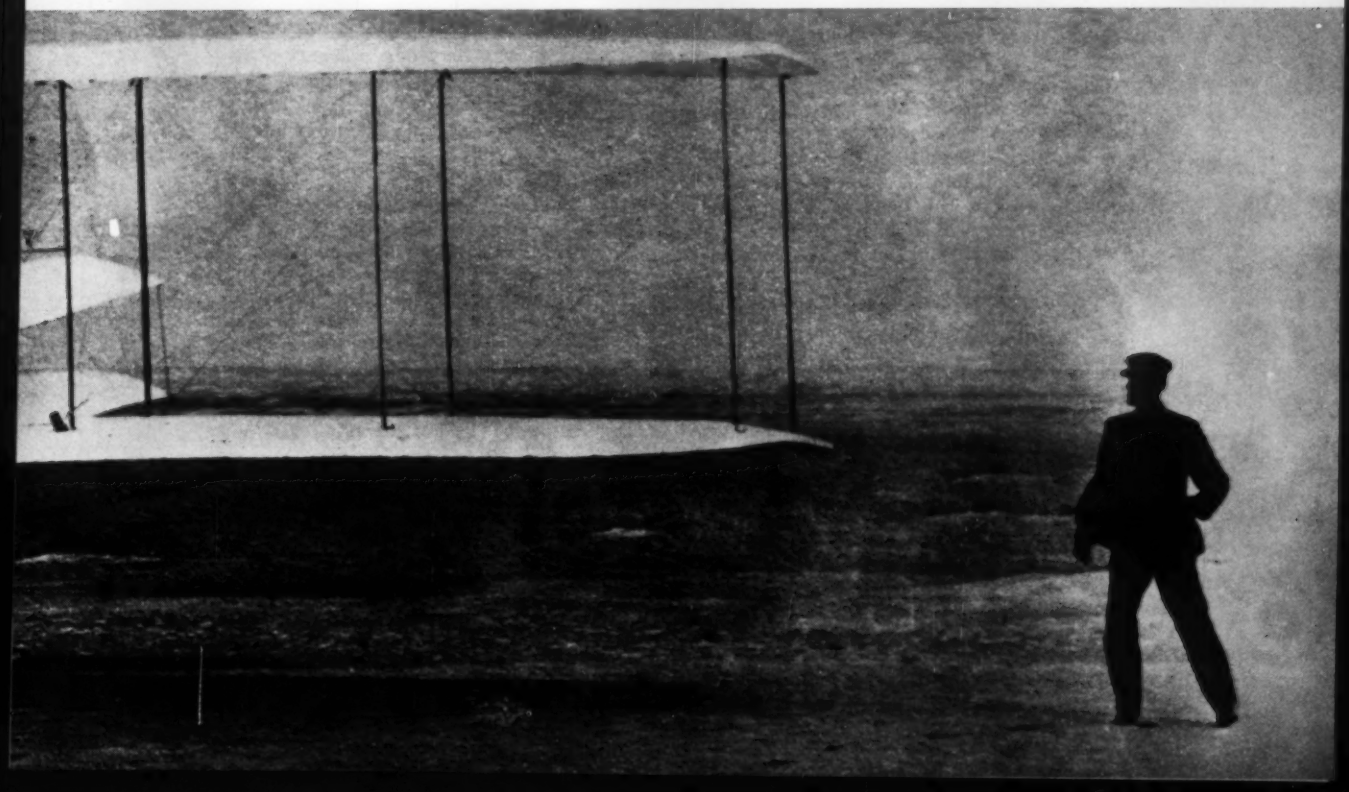
To meet it, *Carpenter* has *doubled its ingot tonnage capacity within the past year* through the acquisition of steelmaking facilities in Bridgeport, Connecticut. New furnaces, mills and finishers—all completely equipped with precise *Carpenter* quality controls—began operation. And capacity—mass production of *predictable performance* specialty steels—is an established fact.

In the years ahead, *Carpenter* will continue to lead the way in quality, and grow apace of industry's ever-increasing demands for the world's finest steels.

tool and die steels
stainless steels
electronic and magnetic alloys
special-purpose alloy steels
valve, heat-resisting and super alloy steels
tubing and pipe
fine wire specialties

Carpenter steel

The Carpenter Steel Company
Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.



Man's Eternal Struggle with the Machine

PRECISE DEPENDABLE, AND CONSISTENT FABRICATING EQUIPMENT IS ESSENTIAL FOR PROFITABLE PRODUCTION

Where do equipment builders hide machines that won't work?

Far too many of them are hidden in customers' plants! And many successful men like yourself, who devise production processes and specify equipment, have gained invaluable experience from such painful, vendor mistakes.

But, regardless of the lesson involved, *your overhead* can't afford the lost production time and heavy expense while you rebuild, or test and prove the vendor's equipment for him. No matter how attractive the original price of the equipment, it's false economy if the price tag didn't itemize the extra money required to make it work right.

Sciaky has always accepted full vendor responsibility for delivering equipment *into production* according to your original specifications. That's why Sciaky resistance welding and production equipment is thoroughly tested and proved to do your particular job *before shipment.* That's why Sciaky equipment is commonly installed, qualified, and certified to the most rigid welding specifications in a minimum of time after delivery.

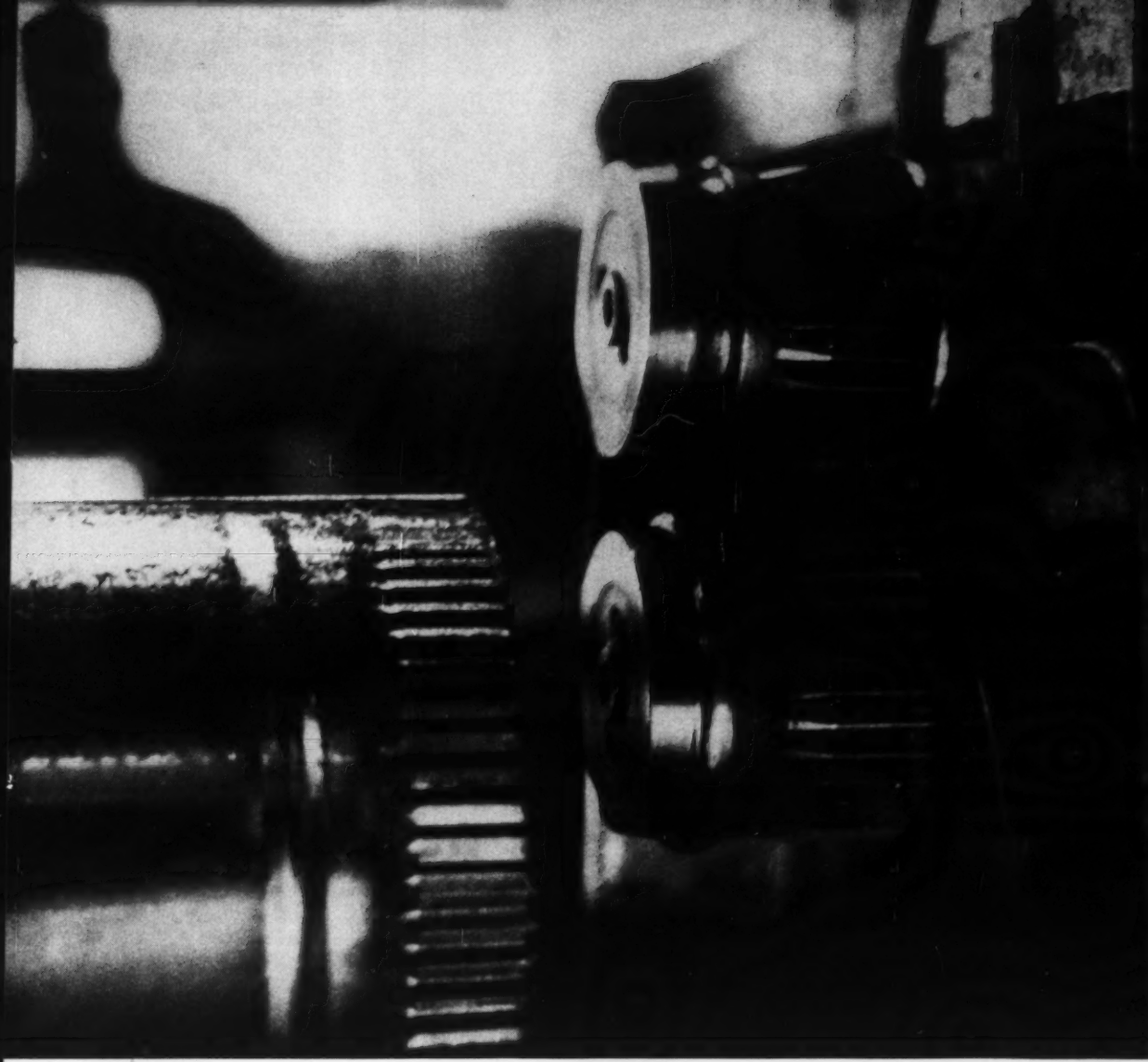
Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

Manufacturers who must satisfy the highest requirements of dependability, consistency, and performance for either research and development or production take that advantage.

Documented case histories of manufacturers who have taken full advantage of Sciaky Techniques of Resistance Welding are presented in the publication "Resistance Welding at Work." Write for copies and advise your field of interest.

SCIAKY

SCIAKY BROS., INC., 4909 W. 67th STREET, CHICAGO 38, ILLINOIS • POrtsmouth 7-5600



"NO REJECTS IN OUR WORK! WE CRIMP CHIP-PROOF WEIRKOTE"

See for yourself, as so many others have. Put zinc-coated Weirkote through its paces. Give it the business—the toughest, most tortuous jobs. Crimp it, bend it, twist it, spin it, draw it. Work it to the limits of the steel itself. Then take a close look.

Not a chip or flake mars its smooth zinc surface! And why should they? Weirkote's continuous process integrates zinc and steel so tightly that chipping and flaking do not occur and a new high in corrosion protection is assured.

Can you imagine what this means to repeated, top-notch production results? To the goodwill of your customers who will continually get the best finished products on the market? To your peace of mind, rid, at last, of annoying, costly rejects?

In spite of all these advantages, Weirkote's cost is low. One more good reason why you should write today for a free 12-page booklet that explains in detail how Weirkote can help you. Weirton Steel Company, Dept. B-8, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

Granite City Steel reports up to 125 heats for tapholes "cast" with Permanente 165 Ramming Mix

New technique developed in cooperation with Kaiser Chemicals helps step up productivity of company's open hearth furnaces

Granite City Steel—whose outstanding modernization and expansion program has made it one of the nation's most efficient steel producers—has developed and proved a technique for "casting" tapholes when a furnace is down for ground rebuild. The "casting" practice (described in detail below) has produced the following exceptional results for four recent Granite City tapholes:

Furnace No.	Capacity	Taphole Life
22	250 T	125 heats
23	250 T	113 heats
24	250 T	92 heats
25	400 T	80 heats

Operators who have switched to Permanente 165 Ramming Mix consistently report exceptional performance—whether for new tapholes, for hot tapholes, or for furnace bottoms!

Permanente 165 is made from high purity Kaiser Periclase refractory grains (94-96% MgO) and ceramically bonds itself into a crystalline mass at relatively low temperature, providing fast furnace availability. This monolithic structure has exceptional volume stability, maximum resistance to hydration and to attack by iron oxide and slag. For furnace bottoms, its high density (averaging 175 pounds per cubic foot after firing) assures longer life.

Make your own comparison test and see how much more life you get with Permanente 165 Ramming Mix. Your Kaiser Chemicals sales engineer will be glad to show you this taphole casting technique or to help with any basic refractories job.* Ask to see the new 30-minute color movie, "Progress in Modern Basic Refractories." Your Kaiser Chemicals Sales Representative or Regional Office will be glad to make the arrangements.

*Ask for details on the new K/R Gunning System.

Call or write Kaiser Chemicals Division, Dept. S9221, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:

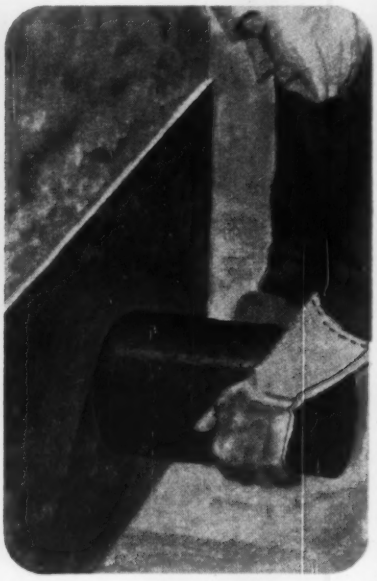
PITTSBURGH 22, PA. . . . . 3 Gateway Center
HAMMOND, IND. . . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

KAISER CHEMICALS

Pioneers in Modern Basic Refractories

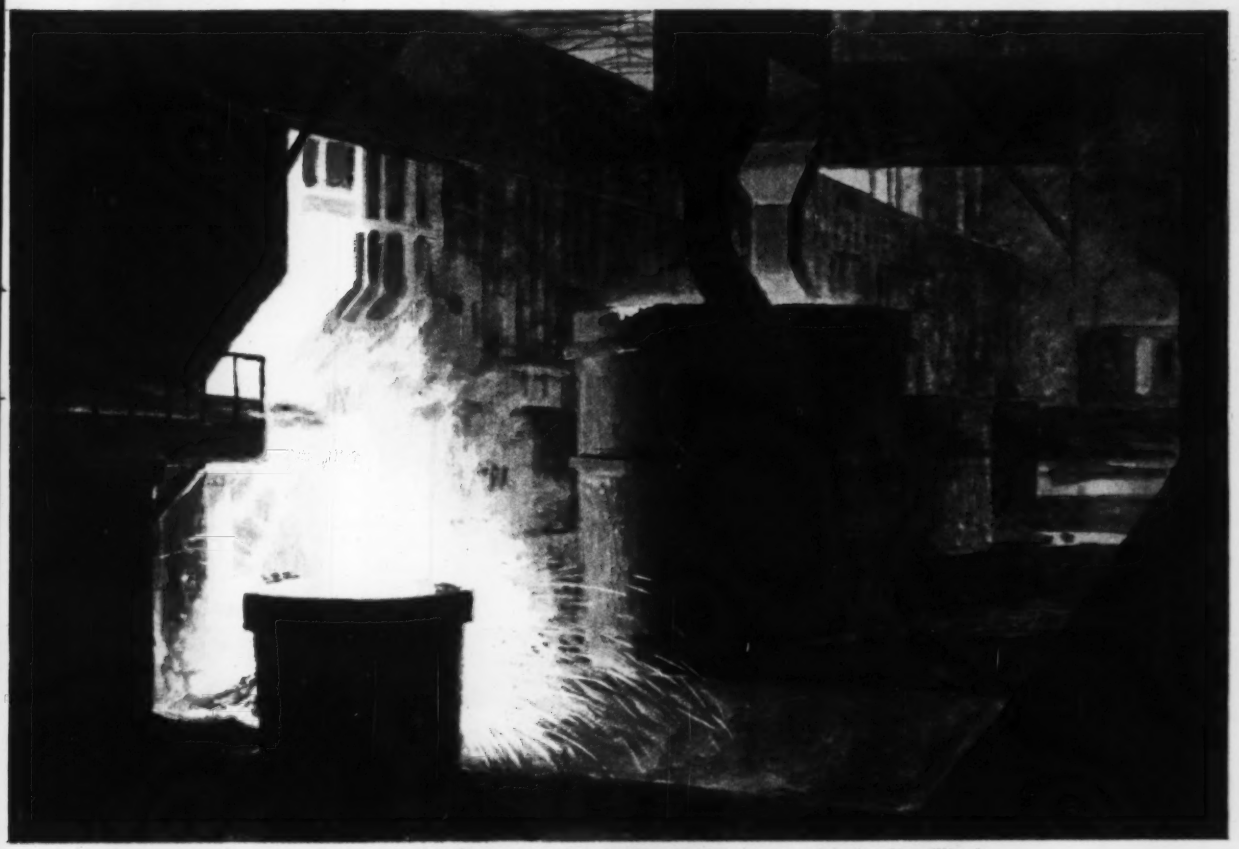
REFRACTORY BRICK & RAMMING MATERIALS • K/R GUNNING SYSTEM
CASTABLES & MORTARS • PERICLASE • DEADBURNED DOLOMITE • ALUMINAS

1 In the Granite City Steel practice developed with Kaiser Chemicals, the first step is to dig out the hole to a diameter of approximately thirty inches. Although practices will vary from shop to shop, this digging usually goes down to brickwork under the pipe, and includes two to three feet of the flat in front of the pipe.



2 Next, a ¼-inch steel plate is welded to the casting in back of the furnace and a hole for the taphole pipe is cut in it at the proper height. The pipe is then set at the proper angle, with the back end protruding through the plate and the front end blocked up with brick . . . ready for the casting forms.

3 Carpenters erect a three-sided wooden form, following the indentations of the back banks as closely as practical. A "plug" nailed inside the front wall of the form fits into the pipe, supporting it so that blocking can be removed. Pipe is now welded to back plate . . . form solidly braced . . . and deck built around form.



Open hearth furnaces at Granite City Steel Company, Granite City, Illinois.

4 The Permanente 165 Ramming Mix is mixed in either regular mixers or mixer trucks. From seven to nine per cent water is used. Mix is at proper consistency when a high-frequency cement vibrator immersed in the Permanente 165 produces a "jelly-like" appearance.

5 When the Permanente 165 mix is poured into the form, the vibrator is used to achieve uniform mix density around the entire pipe. *This is the important feature* of the cast taphole: uniform density of mix at least six inches thick around pipe. Excessive vibrating must be avoided to prevent floating out of bond.

6 Although forms can be removed after only three or four hours, life is improved if the Permanente 165 casting is allowed to cure for several days. After the form is removed, the small section of the flat in front of the casting can be filled either by ramming or casting.

THIS IS

6583

THE IMAGE OF CF&I ...MAKER OF STEEL

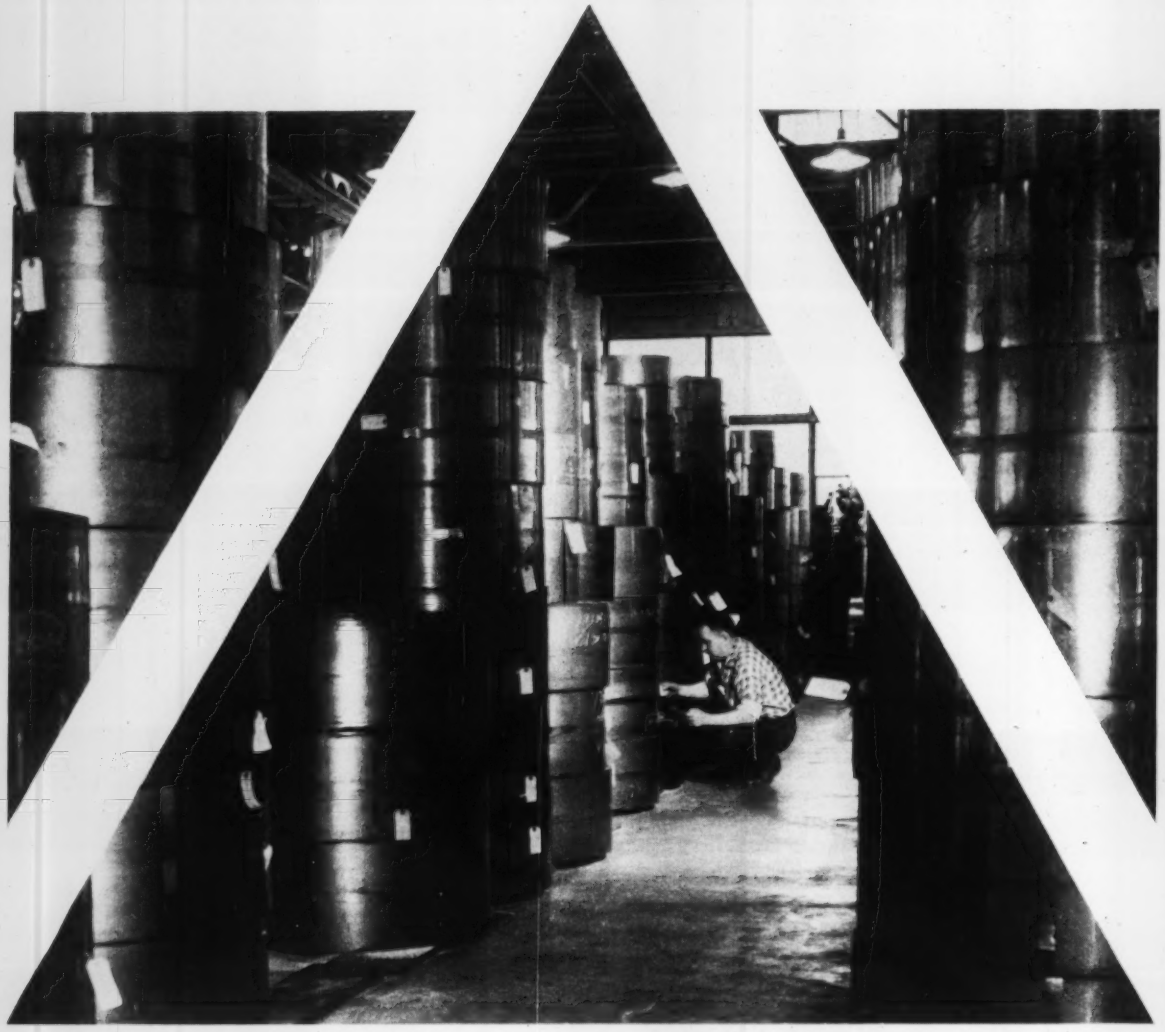
He's a giant steelman. He makes good steel and steel products for the diversified needs of today's economy. He anticipates tomorrow's requirements. He is constantly improving products through research and new manufacturing techniques.

His steel mills extend across the country. In them, he guards every step of manufacturing by rigid quality controls. And in his national network of offices and warehouses, he not only *sells* steel products, but he *serves* their users in every possible way.

He is the dynamic image of CF&I . . . the symbol of dependable steel products. Look for him when you buy.

Plants at:
Pueblo, Colorado • Oakland and South San Francisco, California
Buffalo, New York • Claymont, Delaware • Palmer, Massachusetts
Birdsboro, Pennsylvania • Roebling, New Jersey • Trenton, New Jersey
40 Warehouses and 60 Sales offices located coast to coast

THE COLORADO FUEL AND IRON CORPORATION
DENVER • OAKLAND • NEW YORK



Right Down Your Spring-Steel Alley

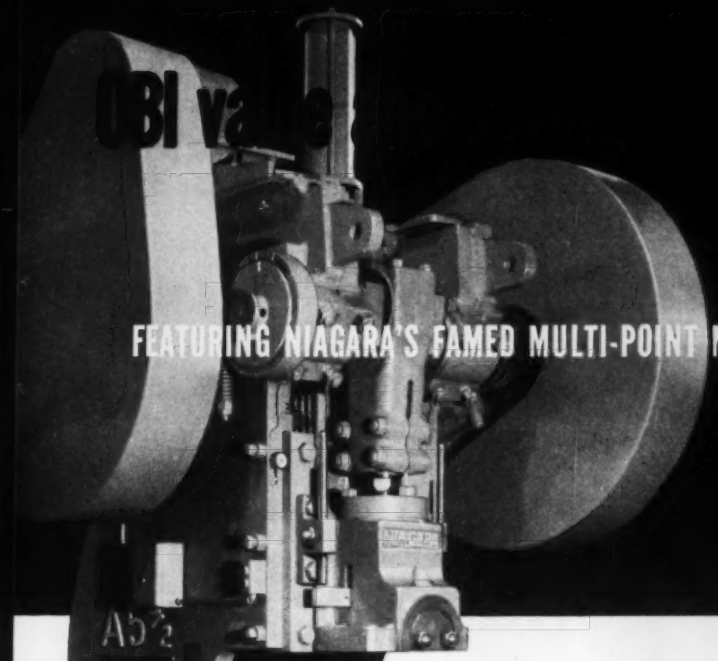
The spring steel you need may be sitting in our mill—ready to ship from stock or to roll, slit, heat-treat and finish to your specifications—but fast. Strip steels in widths up to $6\frac{1}{2}$″ tempered and 13″ annealed or hard-rolled. You specify temper, finish, color, edge, forming properties, tolerance, etc. Find out about these "steels of a lifetime." Write for our 4-page folder highlighting products made from Wallace Barnes Spring Steel. Try us on your next requirement.

Wallace Barnes Steel Division
Bristol, Connecticut

Associated Spring Corporation

5909

TON FOR TON . . . DOLLAR FOR DOLLAR



FEATURING NIAGARA'S FAMED MULTI-POINT MECHANICAL SLEEVE CLUTCH

Picks up load on 14 engaging jaws. Applies driving force concentrically without keys or pins. Assures instant engagement and maximum productive strokes per minute. Needs no air nor electricity. Practically no maintenance. Greater safety: Simplified controls, fewer parts to wear out. *Yes, it permits, inching, too.*

1¼ - 6½ inch shaft diameters

5½ - 150 ton capacities

Here's a workhorse that's known for setting the pace on the most demanding jobs... jobs where the clutch is engaged and disengaged at every press stroke... jobs that call for operation three shifts a day, day in and day out.

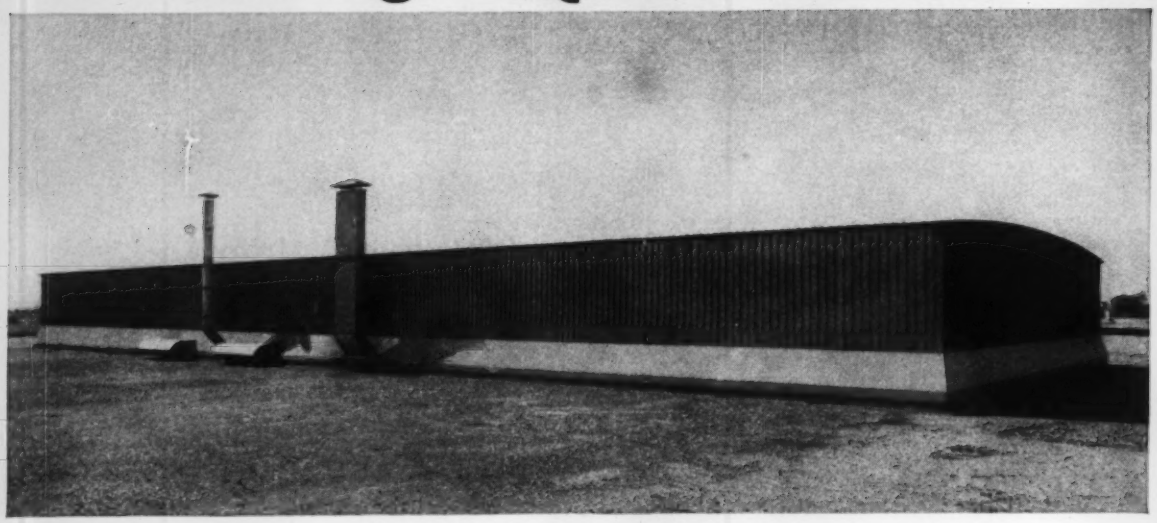
Built and *backed* by a company which produces industry's greatest variety of inclinables*, Series A Presses have amassed an unusual success record in thousands of applications. To be specific, let's take a close look at a Series A user:

28 OBI'S SINGLE STROKED 707,140,000 TIMES
WITHOUT ONE CENT SPENT ON CLUTCH ENGAGING SURFACES

GET THE FULL REPORT

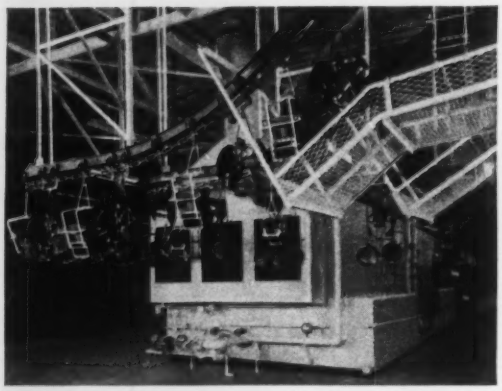
NIAGARA

Processing EQUIPMENT...



Mahon Dehydrating Oven with Controlled Dew Point Installed on the Roof of the Copeland Plant, Sidney, Ohio.

COMPRESSORS are Dehydrated, Sealed, Inspected, Tested, Painted, and Charged with Refrigerant on ONE CONTINUOUS CONVEYOR PRODUCTION LINE!



Mahon Three Conveyor Line Two-Stage Metal Parts Cleaning Machine—Another Unit of the Compressor Processing Equipment Installed at Copeland Refrigeration Corporation, Sidney, Ohio.

The High Temperature, Low Dew Point Dehydrating Oven illustrated above is part of the modern straight-line production facilities for processing Compressors in the Copeland Refrigeration Corporation's plant, Sidney, Ohio.

When you need Processing Equipment or Special Production Equipment of any kind, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering of equipment that will produce the desired end result at minimum cost per unit processed.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago

Engineers and Manufacturers of Complete Conveyorized Finishing Systems: Metal Parts Washers, Metal Cleaning and Rust Proofing Machines, Conveyorized Cleaning and Pickling Machines; Dry-Off Ovens, Spray Booths, Electrostatic Spray Enclosures, Flow Coaters, Dip Coaters, Finish Baking Ovens, and Paint Stripping Equipment; Core Ovens, Soldering Ovens, Dehydrating Ovens, Heat Treating and Quenching Equipment for Aluminum and Magnesium; Dust and Fume Control Installations, and Many Other Units of Special Plant and Production Processing Equipment.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-659

. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE** to **YOU!**

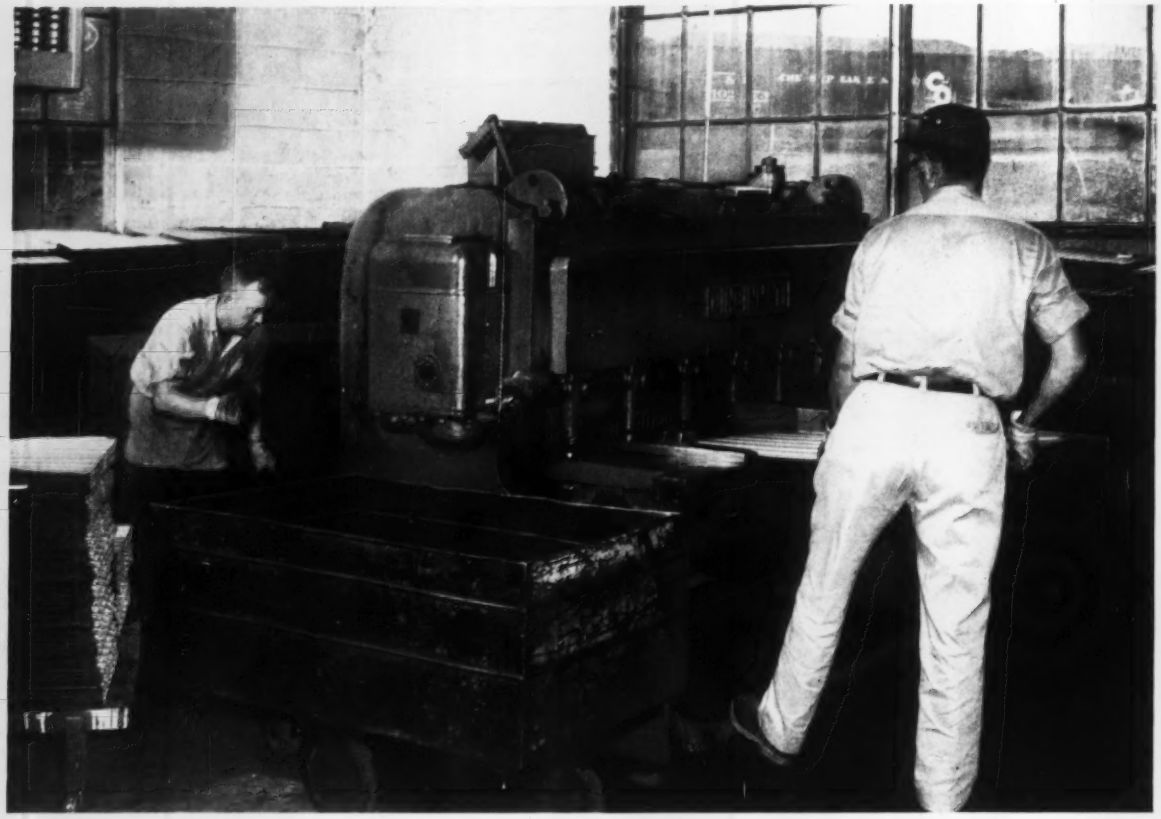
MAHON

stainless strip—that reflects your specifications

Call Crucible to fulfill strict specifications for lustrous finish, uniform quality and gauge in stainless strip. For Crucible produces finishes of incomparable lustre by precision-rolling each coil on modern mills. Exact quality and gauge are consistently ensured because Crucible methodically checks each heat, measures gauges continuously with electronic controls. So why settle for less than strip that reflects your high standards? Call Crucible—a leading producer of stainless in gauges to .010" and in all widths. Or write: *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor—Railway and Power Engineering Corp., Ltd.



PRODUCTION: 10,000,000 cuts
MAINTENANCE COST: $896.00

This Cincinnati® Shear has been in constant service for ten years, cutting 18-gauge corrugated sheet, 1010 draw quality, for a prominent heating equipment manufacturer at an average rate of 4000 cuts a day. That adds up to more than a million strokes per year — or 10,000,000 strokes in ten years.

Accuracy has always been excellent. The machine has been "down" *only for blade changes.* Special blades are used in this operation, to eliminate distortion of the corrugations.

Cost of machine maintenance, including blade resharpening, has been $896.00 for the entire ten years. "This," says their production manager, "to my way of thinking, is very good performance." We agree. Yet this is not exceptional. Every Cincinnati® Shear is built to provide this kind of dependability and low maintenance, and we have hundreds of case histories to prove the point.

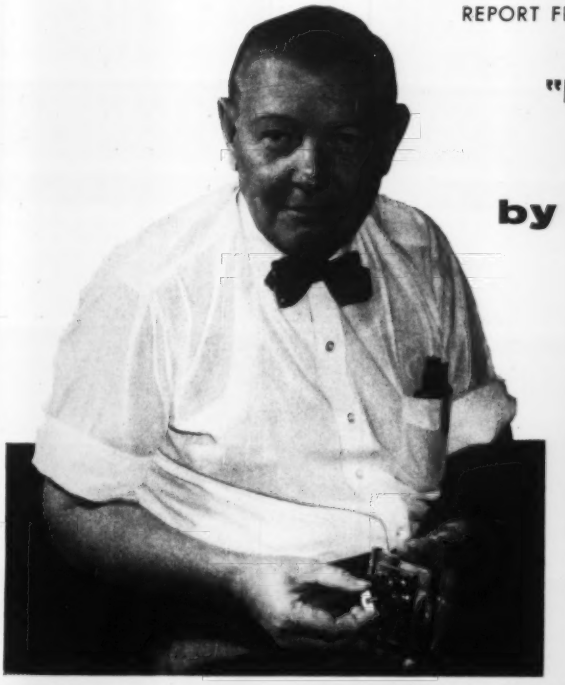
Specify Cincinnati® for all your shear requirements. Write Department C for Catalog S-7R.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

REPORT FROM WESTCLOX • *Division of General Time Corporation*



"Here's how we save $46,464 annually by deburring clock parts with ALMCO BARREL FINISHING EQUIPMENT."

"MY NAME IS A. R. BIERBRODT. Here at La Salle, Illinois, I'm Supt. of Metal Finishing for the Westclox Division of General Time Corporation, makers of the famous Big Ben alarm clocks. I'd like to show you how we save big money by using ALMCO barrel finishing machines for deburring and finishing 24 different clock parts in our plant."

(1) "Here, John Chambers lifts the hood of one of our 10 ALMCO machines. We figure we save $46,464 annually by deburring and finishing clock parts with ALMCO barrel finishing equipment."

(2) "Parts to be finished are added to predetermined proportions of media and compounds. A total of 10,000 cast gear wheels, for example, can be deburred and finished in one hour's time."

(3) "Lock 'er up and we're ready to go. Previously, when these clock parts were deburred and finished with power tools, only 3,500 parts were finished during an 8-hour work period."

(4) "A flip of the switch and the precision process begins. Burrs are removed, rough edges smoothed to specifications, and 80,000 perfectly finished parts delivered to production lines each day."

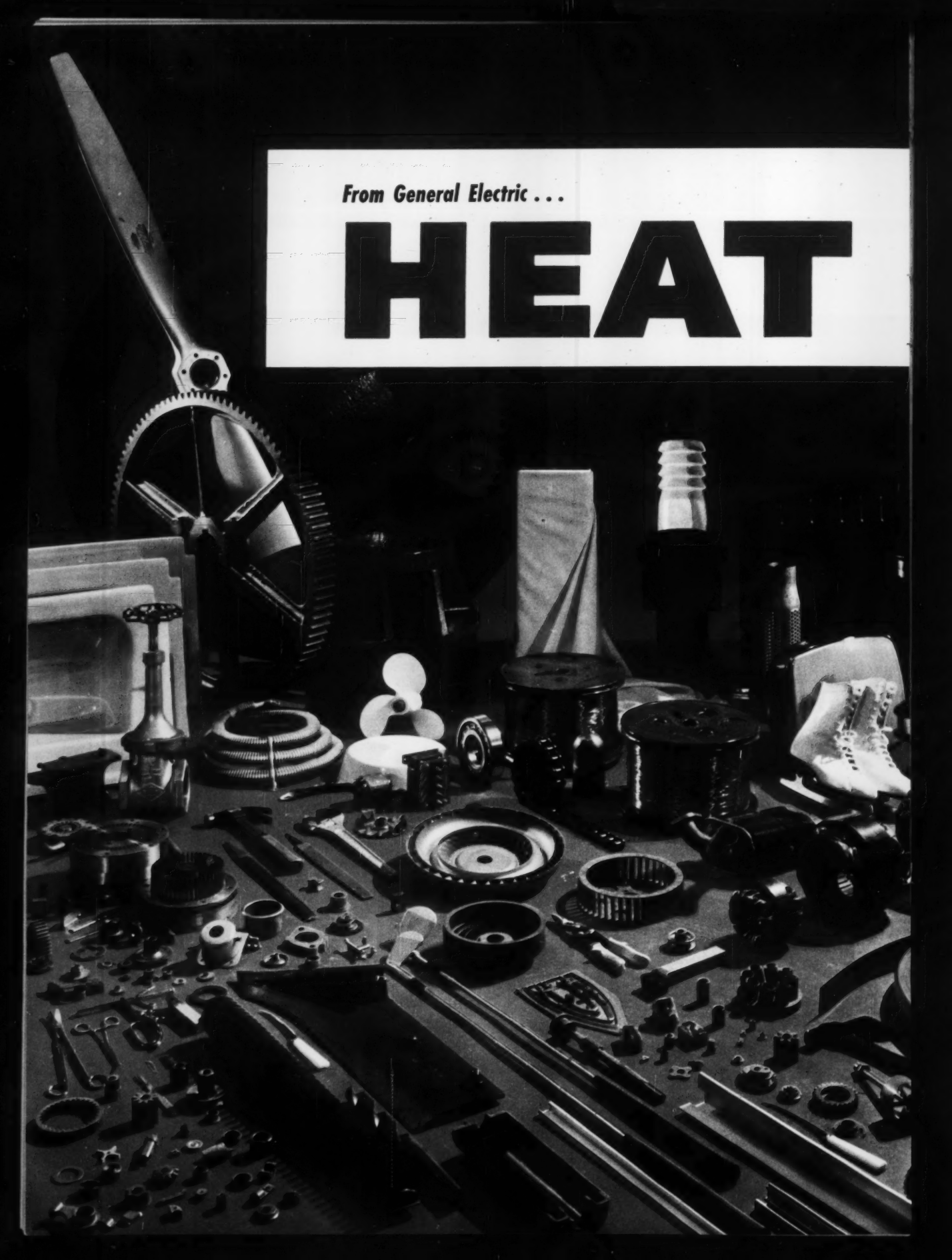
(5) "Here, Harry House, Foreman, inspects clock parts finished by ALMCO Supersheen equipment and methods. Barrel finishing has given us a daily labor saving of $193. What's more, quality and uniformity are good and production is way up. Results are truly outstanding."

LEARN HOW MODERN BARREL FINISHING can improve your product! The facilities of ALMCO's new technician-staffed lab in Albert Lea, Minnesota, are available to you without obligation. Send your sample parts with specifications desired or write on your company letterhead requesting an ALMCO engineer to visit your plant.

SEND FOR YOUR FREE barrel finishing handbook. 52 pages of case history facts and barrel finishing processes. Illustrated equipment section. Includes detailed cost chart on finishing of typical parts. Send for your free copy today!

ALMCO

Queen Products Division / King-Seeley Corporation
153 E. Main Street • Albert Lea, Minnesota
Sales Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven and Philadelphia.
IN ENGLAND: *Almco Division of Great Britain, Ltd., Hitchin, Herts, England.*


From General Electric . . .
HEAT

CUSTOMER SAVES $45,000 IN ONE YEAR

New General Electric furnace development offers similar savings for other bright stainless steel brazing and heat treatment operations.

General Electric design and engineering skill have produced another significant improvement in the construction of heat processing equipment. Engineering development on the application of high purity refractories eliminated the need for metal muffles for this bright stainless annealing and brazing operation which requires high temperature, low dew point heat treatment.

As a result, maintenance and downtime expense for replacing the muffles was eliminated; atmosphere leakage was greatly reduced, and consequently, the customer saved enough to pay the initial cost of the equipment in one year!

This new development, with its significant savings, is equally applicable for other brazing and heat treatment equipment requiring high temperatures and a low dew point. For instance, this design can be adapted to roller hearth, bell, pusher and other furnace types.

Call your G-E Heating Specialist now. He will be pleased to figure your potential savings with new heat processing equipment. The items in the picture at left may offer you ideas on products you process which would be adaptable to General Electric gas-fired or electric furnaces. Contact your nearest General Electric Apparatus Sales Office or write Section 721-22, General Electric Company, Schenectady 5, New York.

The items shown at left are typical of the many products which have benefited from General Electric heat treatment developments—and cost savings often result. For example . . .

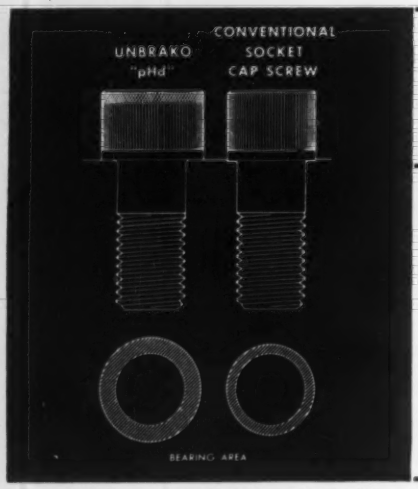
Substantial savings resulted when high-purity brick was used in this mesh-belt furnace eliminating the need for costly furnace muffles which require frequent replacement. This is a major technological advance for the furnace industry with today's trend toward higher temperature operation and the need for atmospheres with very high purity. Similar savings can be made for other difficult to treat components which require bright brazing or heat treatment.

Progress Is Our Most Important Product

GENERAL ELECTRIC

SPS RELIABILITY / *A dynamic standard of predictable performance*

Larger head diameter of UNBRAKO pHd* socket cap screws increases load-carrying capacity up to 233%



COMPARISON OF UNBRAKO pHd AND CONVENTIONAL DESIGN

Each size can now be utilized with equal reliability. The bearing stress is consistent from size to size in the new UNBRAKO pHd socket cap screws.

SCREW SIZE	HEAD DIAMETER (in.)		BEARING AREA (sq. in.)		LOAD TO INDENT IN CAST IRON (lb.)		% INCREASE USABLE STRENGTH	TIGHTENING TORQUE (lb.-in.)‡	
	Old	pHd	Old	pHd	Old	pHd		Old	pHd
¼	.375	.375	.041	.041	3,280	3,280	—	165	180
5/16	.438	.468	.047	.072	3,760	5,760	54	325	360
3/8	.562	.562	.102	.102	8,150	8,150	—	600	660
7/16	.625	.656	.116	.148	9,270	11,800	27	1,000	1,040
½	.750	.750	.188	.188	15,000	15,000	—	1,450	1,590
5/8	.875	.937	.203	.305	16,200	24,400	51	2,900	3,190
¾	1.000	1.125	.223	.432	17,800	34,600	94	5,050	5,600
7/8	1.125	1.312	.254	.594	20,300	47,500	134	8,000	8,900
1	1.312	1.500	.364	.785	29,100	62,800	116	10,550	13,600

*Proper Head Design—a factor in higher product reliability.

‡Normal recommended seating torques for unplated screws, fine threads.

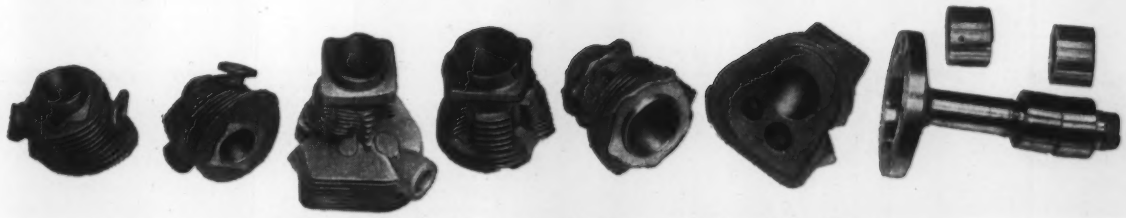
For you, pHd means sounder fastening, with resultant increases in product reliability at no increase in price. With pHd UNBRAKO socket cap screws you get stronger, more reliable joints; space and weight saving through use of smaller or fewer fasteners; greater fatigue resistance through application of consistently higher preloads; fewer fasteners working loose under vibration or shock; and elimination of washers under cap screw heads in many applications.

The principal reasons for the superior performance of broad-bearing pHd UNBRAKO socket cap screws are up to 233% more load-carrying capacity than with a conventional cap screw and the ability to be tightened tighter. Because of increased bearing area, the vital preload that keeps screws tight and prevents fatigue failures is distributed over more of the bolted material. Indentation under high working load is eliminated. And pHd UNBRAKO screws have been designed for high tightening. In many cases the socket has been enlarged for better key engagement. Combined with this feature is the fact that all the tightening force is used to preload the screw, in contrast with the conventional cap screw—where indentation saps some or all of the tightening force.

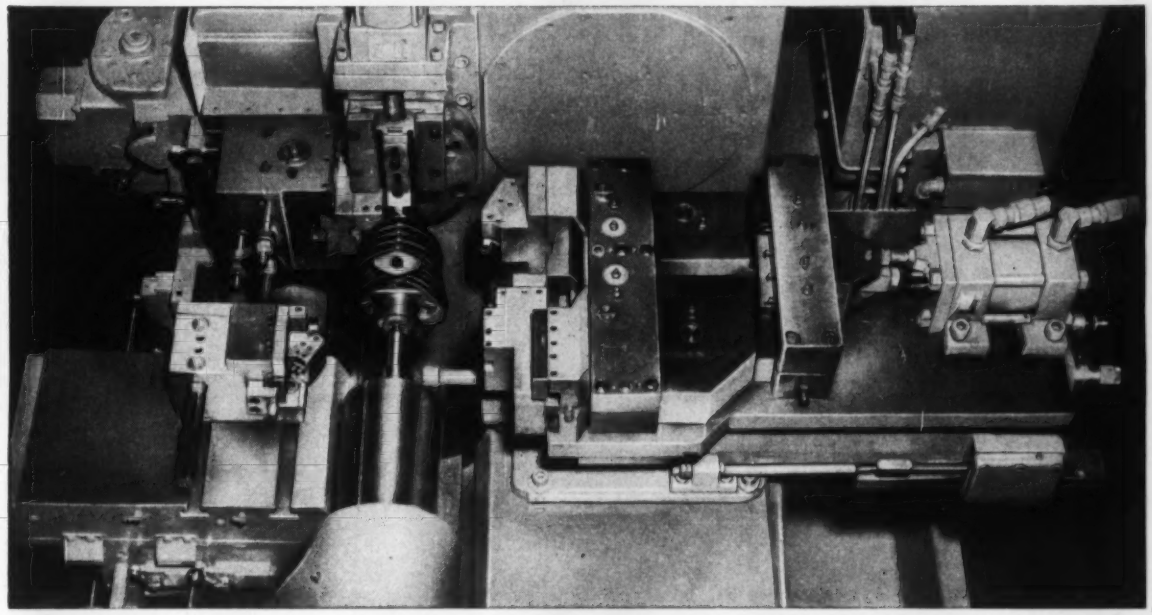
See your authorized SPS industrial distributor for complete details. Or write SPS—manufacturer of precision threaded industrial fasteners and allied products in many metals, including titanium. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 33, Pa.

SPS **Jenkintown • Pennsylvania**

Standard Pressed Steel Co. • The Cleveland Cap Screw Co. • Columbia Steel Equipment Co. • National Machine Products Co. • Nutt-Shel Co. • SPS Western • Standco Canada Ltd. • Unbrako Socket Screw Co., Ltd.



Six different sizes and types of workpieces are handled easily on this job. Extra expanding mandrel and sleeves at right are for different sizes.



How Harley-Davidson speeds motorcycle part production

Machines both ends in single chucking, using Gisholt No. 12 Automatic to get maximum accuracy, cut production costs

This well-planned setup reveals how Harley-Davidson Motor Co., Milwaukee, Wis., is handling cast iron front and rear cylinders.

Smart tooling on a Gisholt MASTERLINE No. 12 Automatic Production Lathe handles 6 different sizes and types of workpieces. Change-over is fast and easy. A special headstock-mounted, air-operated locating stop speeds work handling.

While tools in the front carriage turn and chamfer at one end of the piece, tools in a headstock-mounted auxiliary slide chamfer the I.D. on the other side. Simultaneously, tools on the rear slide face both ends for length. At the end of the cut, tool blocks on the rear independent slide swing open automatically to provide tool relief before withdrawal. Floor-to-floor time on the part shown is 1.2 minutes, only 1.8 to 3.6 minutes for the other 5 workpiece types and sizes.

The new Gisholt MASTERLINE No. 12 Automatic Production Lathe is designed specifically for high production operations; yet, it is flexible enough to handle a variety of similar parts in small repeat lots. The automatic cycle frees the operator to handle other machines or do other work.

Make a note to phone your Gisholt Representative today. Ask him to come in and show you where the fast automatic cycle and flexibility of the No. 12 Automatic Production Lathe can cut your floor-to-floor time and reduce your costs.

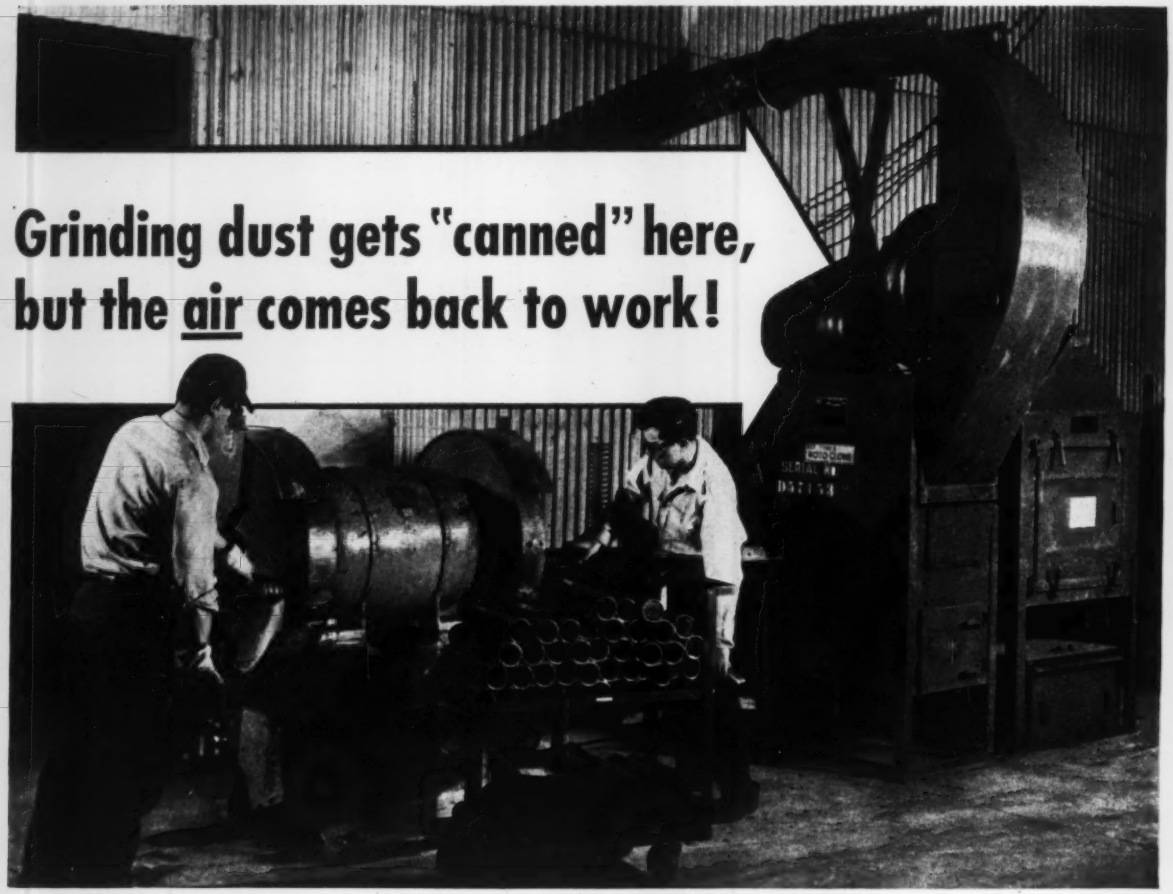
MASTERLINE GISHOLT SINCE 1887 GISHOLT

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin, U.S.A.

WRITE GISHOLT TODAY for advance data on the new Gisholt MASTERLINE No. 12 Automatic Production Lathe. Ask for Form 1178.

Grinding dust gets "canned" here, but the air comes back to work!



AAF ROTO-CLONE-Cycoil team saves money for Duer Spring Co.

AAF's team of Type D ROTO-CLONE and P-17 Cycoil is the ultimate in metallic grinding dust control. Duer Spring Company, McKees Rock, Pennsylvania, is an example. Here's what these units are doing for them: (1) eliminating *all* spring grinding dust, (2) saving on fuel bills by returning cleaned air to the workroom, (3) lowering maintenance costs by preventing oxidation to building.

The Type D ROTO-CLONE gets the first shot at the grinding dust and removes all but the very small particles. The dust that does get through this rugged dry collector is trapped by the high-efficiency P-17 Cycoil Oil Bath After-cleaner. The dust-free air exhausted by the Cycoil is returned to the workroom.

Get all the advantages of modern dust control. Call your local AAF representative or write direct for Type D ROTO-CLONE Bulletin 272A and P-17 Cycoil Bulletin 285A. Address: Mr. Robert Moore, American Air Filter Co., Inc., 443 Central Avenue, Louisville, Ky.

AAF American Air Filter

BETTER AIR IS OUR BUSINESS

brighten homes, brighten sales with life-long beauty

UNILOY
STAINLESS STEELS

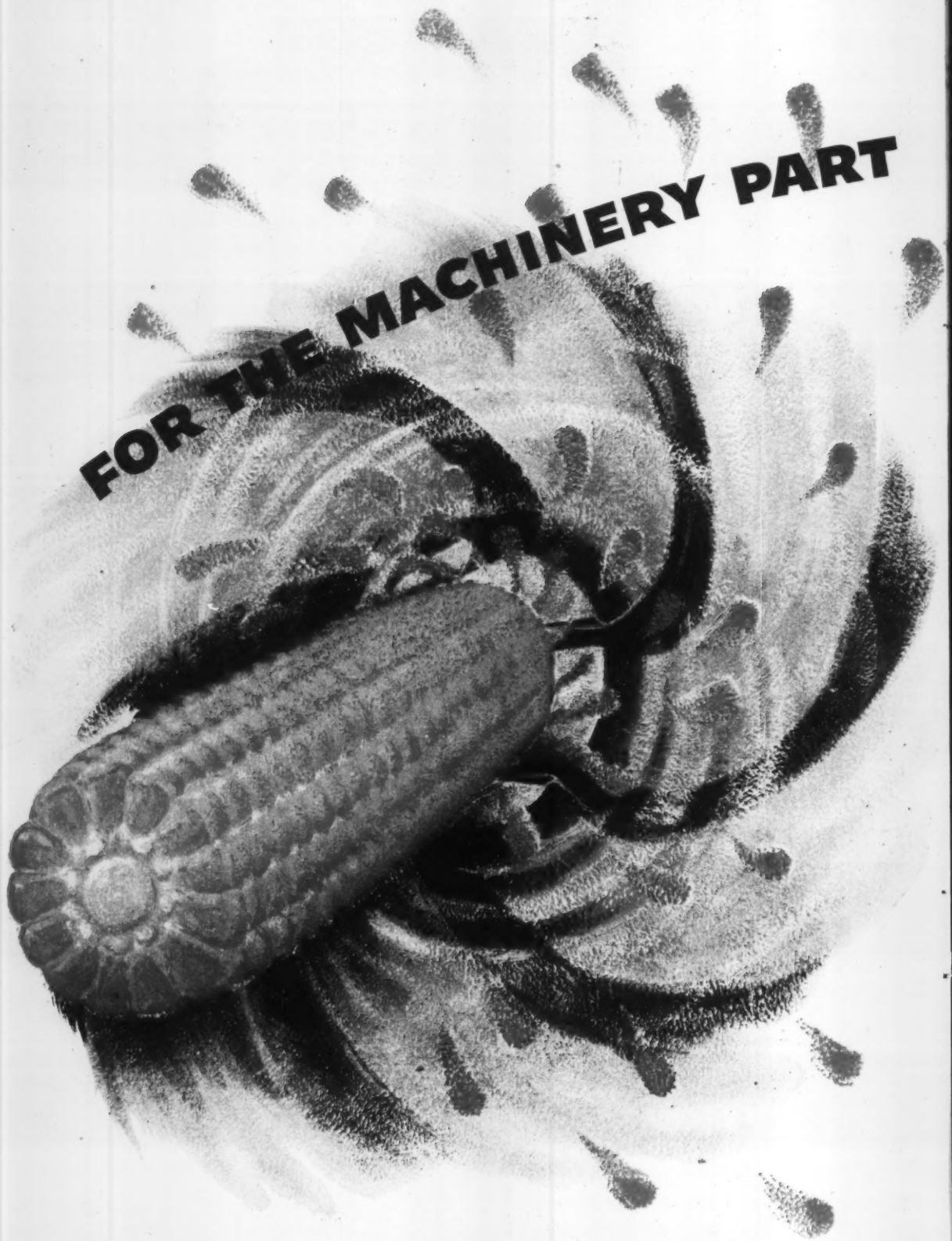
The gleaming beauty, plus the permanence and ease of cleaning have made stainless steel the wife's delight—and sold many a home.

When made from Uniloy stainless steel, flatware, utensils, and other kitchen accessories have that inviting blend of beauty and permanence so appealing to the modern homemaker.

Uniloy stainless steels—easy to work and form—are rolled to most exacting specifications by steel makers who have been making specialty steels since 1884.

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

STAINLESS STEELS • TOOL STEELS • HIGH TEMPERATURE METALS


FOR THE MACHINERY PART

THAT TAKES THE BEATING

HAYNES Alloys *will do the job!*

An example: Knives tipped with HAYNES STELLITE alloy 6K whirl at 15,000 rpm as they strip corn cobs of their kernels. Not only do they resist corrosion, but canners report that they stay sharp six times longer than previously used cutting edges.

This is typical of the results reported by design and production engineers that specify HAYNES alloys. Parts made of these alloys are operating successfully in thousands of plants – under the roughest service conditions.

If you need a tough metal part, investigate HAYNES alloys. There are more than 15 of them from which to choose, including HAYNES STELLITE cobalt-base alloys, HAYNES iron-base alloys, HAYSTELLITE cast tungsten carbide, and HASTELLOY nickel-base alloys. They are available as castings, forgings, completely fabricated parts, or as sheet and bar stock. All parts can be furnished machined or ground to specified size and finish.

Our engineers will help you pick the right HAYNES alloy to resist practically any condition of wear, heat, or corrosion.

HAYNES ALLOYS

HAYNES STELLITE COMPANY

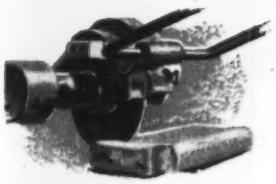
Division of Union Carbide Corporation

Kokomo, Indiana

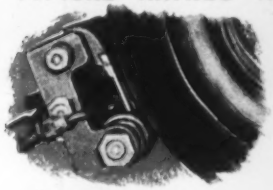
UNION CARBIDE

The terms "Haynes," "Haynes Stellite," "Hastelloy," "Haystellite," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

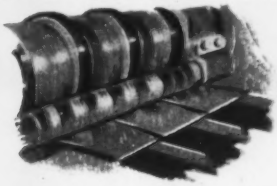
TYPICAL "HAYNES" ALLOY MACHINERY PARTS



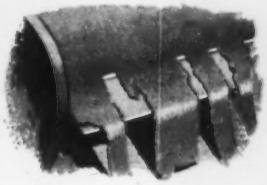
Metal-cutting saws, made of HAYNES STELLITE alloy sheet, over 20 in. in diameter slice the tops off copper ingots.



Trimming 3000 auto tires without resharpening is routine for knife blades made of HAYNES STELLITE alloy.



Slitter knives tipped with HAYNES STELLITE alloy trim miles of sheet metal in a can making operation.



Doctor blades made of HAYNES STELLITE alloy assure long service life trimming abrasive cake from filter drums.

Eye Protection

F9700 with Calobar lenses. Ideal for outside workers — maintenance yard men, vehicle drivers, R. R. transportation men, and personnel who need protection against glare, dust, wind, cinders, flying particles.

F9700* SERIES 2-TONE — Latest Ful-Vue Spectacle Type addition to a line combining the finest in safety values and smart good looks — another example of how AO's continuous research and engineering pays off. The attractiveness of these onyx on crystal acetate glasses is apparent but we cannot overemphasize that they are *true safety standard* in every respect — with safety hardened lenses and safety frames etc. Light, strong and durable, they protect against frontal foreign particle impact. Also ideal for chemical and physics lab work, electrical and other operations where sparks may cause fire or explosion. Comfort cable or spatula temples. The AO plaque on the frame means a true safety frame

*FX9700 with adjustable nose pads

It's Smart to be Safe — and Safe to be Smart with

3 GREAT LINES OF AO "ULTRASCOPIC" SAFETY GLASSES

F5100 SERIES METAL — For frontal protection (and with side shields, front and lateral protection) on machine, hand tool and woodworking machine operations. Comfort cable temples for glasses with side shields, spatula or comfort cable types for glasses without side shields. Side shields are individually fitted adjustable, replaceable. Sizes clearly marked.

F9500 SERIES* ACETATE — For frontal protection against foreign particles on machine and hand tool operations and chemical and physics lab work. Also with side shields for front and side protection when chipping, grinding, riveting, bottling, spot welding etc. Available with copper bronze frame as F9500CB.

*FX9500 model with adjustable nose pads.

NOTE: All 3 lines are available with clear or Calobar lenses (the latter for protection against glare, heat, ultraviolet and infrared hazards as well as impact). All lines feature engineered eyewire design with a deep groove to hold lenses securely and safely on impact . . . and many other features.

YOUR NEAREST AO SAFETY PRODUCTS REPRESENTATIVE CAN SUPPLY YOU.

Always insist on the AO Trademark on lenses and frames

American AO Optical
COMPANY
SAFETY PRODUCTS DIVISION

Southbridge, Massachusetts

Branches in Principal Cities

Strong Restraining Influences...

Roebling Hose Reinforcing Wire

Roebling Hose Wire, Hose Reinforcing Wire and Hose Wrapping Wire bear the stamp of Roebling's strict attention to constant uniformity. As with all Roebling wire products, each is wholly Roebling-made and Roebling-controlled, from open hearth to packaging. Tensile strength and forming qualities, finish and gage are of an excellence that proves itself in use.

Resistance to internal and external pressures and wear are what you look for in hose wires and what you pay for. With Roebling, you *get* them.

For further information on these and other Roebling quality products, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling...Your Product is Better for it

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

Stanscrew *standard* fastener does *special* job on free-wheeling hubs for "Jeep"

Attaching POWER-LOCK free-wheeling hubs to Willy's 4-wheel drive "Jeeps" calls for something pretty "special" in fasteners.

To begin, the fasteners must be tough and dependable . . . must have the ability to stand up under the punishment that is normal for an "off the road" vehicle. Since these hubs are sold separately, the fasteners also must present an appearance that builds consumer appeal. And they must be completely uniform to facilitate installation.

The Cutlas Tool and Manufacturing Company, Lyons, Ill., manufacturers of this Willys approved accessory, outlined the problem to a Stanscrew fastener specialist. He recommended Stanscrew's heat-treated cap screws with the extra toughness resulting from "Carbon Restoration" . . . cadmium plated for greater consumer appeal and higher corrosion resistance . . . and produced in an unusual length to precisely meet all the requirements for installation on Willy's "Jeep" vehicles.

Thus, by slightly modifying one of the more than 4,000 standard fasteners in Stanscrew's complete line, this specialist was able to supply a fastener which eliminated the necessity for a costly special.

Quite possibly your Stanscrew fastener specialist can do the same for you. He can bring to your problem years of specialized experience, and the services of an outstanding engineering staff. And he can make recommendations from a complete line . . . always in stock, quickly available.

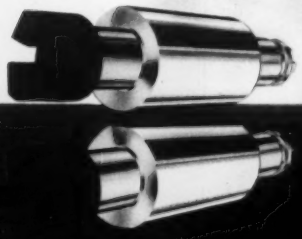
So for the answer to your "special" fastener problem, just call your Stanscrew distributor today. He will arrange for a meeting with the Stanscrew fastener specialist in the very near future.

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

WHY THE WORLD'S MOST MODERN MILLS



USE MACK-HEMP ROLLS

PHOTO COURTESY JONES & LAUGHLIN STEEL CORPORATION

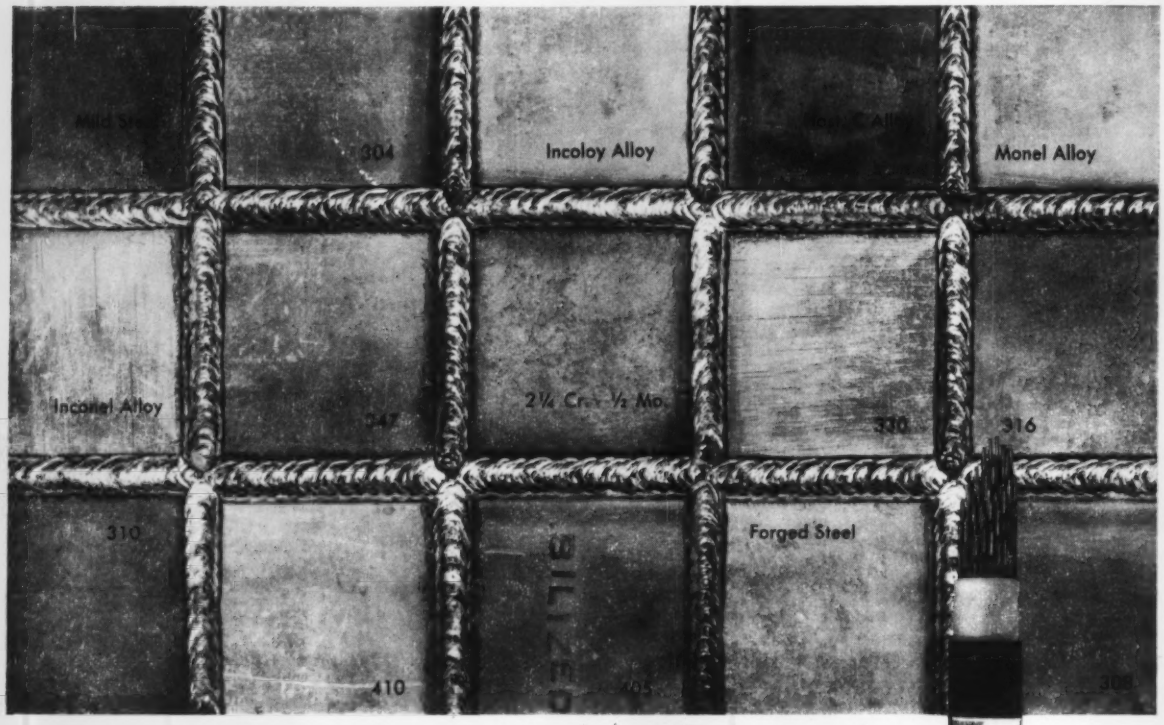
This new Bliss 4-stand cold reduction mill at Jones & Laughlin's Cleveland Works is the most modern of its kind in the world today. Naturally, Mack-Hemp rolls figure prominently in its roll inventory . . . just as they do everywhere metals are rolled. That's because Mack-Hemp's progressive metallurgical policy continues to pour forth a flow of new roll developments unmatched in the industry, just as it has over the past 135 years. Today, the rolls with the striped red wabblers give you greater tonnages than ever before.

MACKINTOSH-HEMPHILL DIVISION · PITTSBURGH · U.S.A.

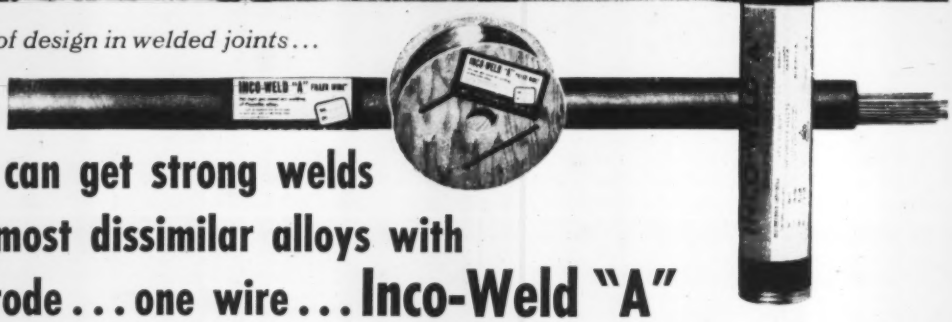
BLISS

MACKINTOSH-HEMPHILL • Division of E. W. BLISS COMPANY

Pittsburgh and Midland, Pa.



New freedom of design in welded joints...



Now you can get strong welds between most dissimilar alloys with one electrode... one wire... Inco-Weld "A"

No longer do you need to avoid designs involving welded joints between dissimilar alloys.

With Inco-Weld* "A" Electrode or Inco-Weld "A" Wire you can rely on sound production welds in better than 97% of dissimilar alloy combinations involving ferritic and austenitic stainless steels, low alloy steels, mild steels, high nickel alloys and other alloys.

Inco-Weld "A" Electrode and Wire assure you of strong, ductile joints suitable for severe service . . . welds of X-ray quality . . . made without special training or techniques.

Corrosion resistance of joints usually equals or exceeds that of the base metal. With Inco-Weld "A" Wire, the deposit can be age-hardened.

Don't hesitate to design in dissimilar alloys . . . keep Inco-Weld "A" versatility in mind.

For technical data and case history evidence showing how others use Inco-Weld "A" Electrode and Wire successfully, send for folder "Now You Can Weld Dissimilar Alloys." Write The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.

*Trademark, The International Nickel Company, Inc.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street — INCO — New York 5, N. Y.

SOME OTHER DISSIMILAR METALS SUCCESSFULLY WELDED WITH INCO-WELD "A" WIRE

Plate Material	Thickness	Plate Material	Thickness
304 to Monel Alloy	.078"	Nickel to SA-285	.062"
304 to Carbon Steel	.078"	Inconel Alloy to Hastelloy "C" Alloy	.078"
Carbon Steel to Monel Alloy	.078"	10% Ni-Clad-Steel to 10% Ni-Clad-Steel	¼"
Carbon Steel to Inconel Alloy	⅜"	3½% Ni-Steel to 3½% Ni-Steel	½"

INCO WELDING PRODUCTS

electrodes · wires · fluxes

Strike Odds Dip as Steel Stocks Rise

Steel inventories will be at 20 million to 21 million tons by June 30 when the three-year labor pact expires. While inventories will still be considerably below the high level prior to the 1956 strike, the buildup lessens economic pressures on the producers and lowers the odds for a strike this year. Consumers will have enough steel on the shelves to see them through a four to six week work stoppage at the mills. The buildup will keep the industry operating at near record levels throughout the first half.

Eisenhower on Steel Wage-Price Increases

Because of the headlines and interpretations about what President Eisenhower said last week concerning steel price and wage increases, STEEL repeats the question and answer. Reporter: "Senator Kefauver has proposed the steel industry forego the price increase if the steel union limits its wage demands to an amount equal to the average increase in its production. What do you think of this?" President: "I have always urged that wage increases should be measured by an increase of productivity. I am talking a little out of my depth here because I am not an economist, but it looks to me like they (steel companies) wouldn't really have to have an increased cost if this wage drive was measured by that criterion (equate wage boosts to productivity gains)." He added that a company should not have profits cut too low.

Needed: More Unanimity on Depreciation Reform

Our federal depreciation laws force industry to overstate profits to such an extent that your company may actually be taxed at an 80 per cent rate rather than the statutory 52 per cent. We need reform now, say U. S. Steel Corp.'s R. C. Tyson (right) and nearly all of the other 918 metalworking executives questioned by STEEL on the kinds of reform they prefer. No single approach has the majority's favor (Page 69). Since a majority can't agree on what should be done, it's not surprising that Congress has enacted no broad depreciation reform. Needed: An approach that most industrialists can support.

Labor Strife May Follow Lewis' Retirement

Metalworking managers will want to keep a weather eye on what may become a tumultuous era for the United Mine Workers. Age and illness are hastening the retirement of John L. Lewis, 79. Long term peace in the coal

fields may be destroyed if rival district chiefs get entangled in a power struggle. Another potential source of trouble: Other industries may face organization battles if the UMW continues to expand in nonmining areas.

Electric Auto on Comeback Trail

With small car production just getting into full swing, the auto industry may have to grapple with a second new market factor: The electric auto. Two companies are reviving it. New, lightweight batteries have sparked the comeback, with an assist from glass fiber bodies (Page 74). Electric utilities are interested because battery charging would boost power consumption.

Detroit Plans Its Small Car Bid

Metalworking will have a ringside seat this fall as Detroit's heavyweights square off for round one of the small car contest. Autodom's Big Three, unable to ignore the 15 per cent chunk of the market snatched by the Lark, Rambler, and foreign makes, are rushing to meet 1960 introduction dates (Page 73). Annual small car sales of 3 million units by 1963 are predicted by George Romney, American Motors Corp. president. He says: "The Big Three's development of compact cars signals the end of the era of big car sales domination in the U. S. and a rapid rise in compact car sales to the position of leadership."

Price of Bad Air: $7.5 Billion

You'll want to follow the course of federal and local legislation on air pollution; it's a costly problem for most industries. Bad air costs the nation $7.5 billion a year, a figure that will rise drastically in the next decade. The figure covers cost of control equipment, research, and damage from uncontrolled pollution. Congress will consider extension of the Air Pollution Control Act at this session. With abatement responsibility in the hands of state and local governments, you could be hit at any time by being forced to install expensive equipment. Or, falling local property values might bring a compensatory tax hike (Page 84).

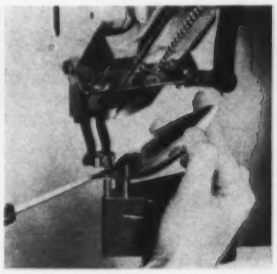
Jobless March on Washington O.K.'d by AFL-CIO

Walter Reuther, United Auto Workers' chief, has won support of the AFL-CIO high command for his planned march of the unemployed on Washington (no date has been set). Approval was given by a reluctant George Meany. The federation president had been holding out for a union caucus to recommend economic aid legislation for idled labor. The agreement to sponsor a jobless gathering came in closing sessions of the AFL-CIO executive council's winter meeting in San Juan, Puerto Rico. The meeting was marked by a growing rift between Messrs. Meany and Reuther; the auto workers'

chief got his way by threatening to quit as the federation's economic policy chairman.

New Machines Quicken Riveting Pace

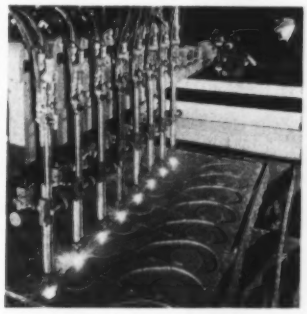
If riveting is on your list of problems, hear this: Machines for this type of fastening have been upgraded and they're faster. Some are equipped with multiple station indexing tables. Others have automatic feeds and can handle two rivets with a single stroke. STEEL (Page 120) brings you up to date on what the machinemakers have been doing to keep pace with today's demand for more improvements.



Coming: Wheelless Vehicle That Rides on Air?

"I foresee the day when the wheel will have reached its top speed capabilities," says A. L. Haynes, director of Ford's engineering research. It has developed the Levacar, an experimental wheelless vehicle that rides on a thin film of air a fraction of an inch above the roadbed. Instead of wheels, the Levacar employs "levapads" enabling the unit to slide at high speeds, using air as a lubricant. One possible application of the Levacar might be on rails. A turbojet could power it up to 500 miles an hour.

Gas Toolmakers See $40 Million Year



Gas welding and cutting toolmakers look for $40 million worth of business this year, a 14 per cent pickup. Chances are your maintenance department is a user of gas welding equipment. Gas cutting is widely employed in multiple shape cutting production. Producers can supply custom built automatic cutting machines, although large and complicated cutting units have become standard equipment in many lines (Page 81).

Outlook Bullish in Business Community

Rising sales and profits are expected this year by 77 per cent of 1542 business executives interviewed in a recent Dun & Bradstreet survey. Of the dissenters, 20 per cent foresaw no change over last year and only 3 per cent expect a sales dip. The proportion looking forward to profit gains was highest among manufacturers of durable goods. Twenty-seven per cent expect to boost prices over last year's; 70 per cent contemplate no change.

New Nozzle Means Hotter Missile Fuels

More powerful solid fuels can now be used in the Polaris and Minuteman missiles with installation of a movable molybdenum nozzle in the tail. The

nozzle, built by Cleveland Pneumatic Industries Inc., is made of cast molybdenum rings mounted on pinions; it had been used as a control device.

Take a Look at New Machine Values

You may pick up some profitable ideas from an equipment replacement study conducted by Barber-Colman Co., Rockford, Ill. (Page 118). Three new presses for assembling electric motors were bought when the study showed they would not only increase production, but halve the cost of hand assembly methods. The company uses modified interpretations of a Machinery & Allied Products Institute formula and maintains a continuous audit to determine if the new equipment purchases were justified. Auditing results provide a basis for decisions on future equipment purchases.

Krupp Empire Not Likely To Crumble

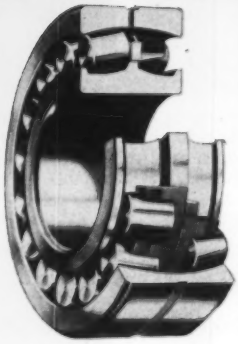
Alfried Krupp's industrial empire in West Germany did more than $800 million in business last year—not bad for an industry supposedly dismantled by international agreement. U. S. foreign traders will feel the effect of Krupp's amazing rebirth; the company's last financial report showed a 30 per cent jump in export business over the previous year. Krupp production mounts annually; the firm's new engineering arm has a world-wide reach. Planning a resurgence in steelmaking, Herr Krupp is negotiating to raise his share of West Germany's steel production from 9 to 16 per cent (Page 76).

Shipbuilding Hits New Peacetime Highs

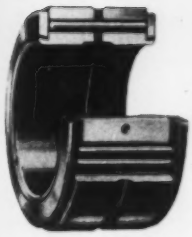
New world shipbuilding records were set last year with peacetime production nearing the war year spurts of 1943-44. Japan again reigns as the world's leading shipbuilder; for the first time, West Germany is second; the United Kingdom slipped to third place, the lowest position it ever held. U. S. ship launchings ranked fifth, behind Sweden. Lloyd's Register of Shipping reports these gross tonnages: Japan, 2,066,669; Germany, 1,429,261; United Kingdom, 1,401,980; Sweden, 760,206; U. S., 732,381.

Straws in the Wind

Canadian steelmen report an uneven pickup. Some fabricators are starving; others are fat. Steel's capital outlays are expected to be high this year; new mills are being built on the St. Lawrence in Quebec . . . Chrysler Corp.'s new South African company will assemble Chrysler and Simca cars in its 215,000 sq ft plant—60 cars and 12 trucks daily . . . Published, but unconfirmed, reports have it that GM has been readying plans for spinning off its Chevrolet Div., if the Justice Department decrees a divorce . . . American Can Co. says falling aluminum prices are bringing on the day when the metal will compete with tin plate in can production on a gage-for-gage basis . . . Agriculture Department has removed nine strategic minerals from its foreign shopping list, 28 remain.



from
power shovels...



to
helicopters

Torrington makes the right anti-friction bearing for every basic need!

Application requirements differ. A lightweight, high-capacity Torrington Needle Bearing is just right for a helicopter. But it's a different story with a mammoth power shovel, where Torrington Spherical Roller Bearings or Tapered Roller Bearings perform best.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

This range of experience can be of invaluable service to you in engineering your own anti-friction applications. Your Torrington representative is well qualified in your field: call on him for engineering assistance. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

How the Armco Stainless "Wardrobe" of Finishes Can Help You Save

New steels are born at Armco

No matter how they are finished on the outside, Armco Stainless Steels are always the same high-quality, corrosion-resisting steels all the way through. But you can save money by specifying the *one finish* from the Armco Stainless "wardrobe" that best suits your product's needs and requires the fewest additional finishing operations in your plant.

MANY ARMCO FINISHES TO CHOOSE FROM

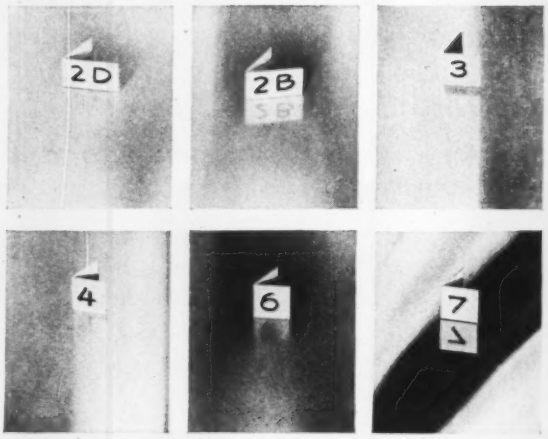
Because they serve in many different products, Armco Stainless Steels are available in a wide variety of surface finishes.

Tough jobs call for workclothes. One of the unpolished surface finishes is generally most economical in high-temperature industrial uses, involving highly oxidizing or very corrosive atmospheres. On the other hand, when appearance, sanitation, or easy cleaning comes first, a polished stainless surface is required.

Patented Armco processes offer additional possibilities. Small parts and intricately-shaped pieces can be economically polished by Armco's electropolishing process. Another Armco process "Ebonizes" (blackens) stainless steel parts.

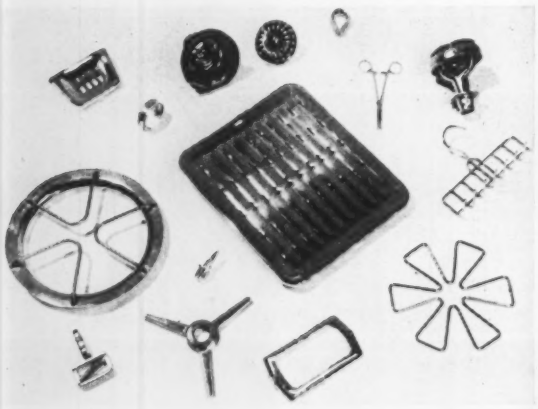
BROAD RANGE OF STAINLESS

Remember, too, Armco Stainless Steels are available in a wide range of standard and special grades—in gages, sizes, and shapes to suit design needs. For more information about Armco's Stainless Steels or their surface finishes, just fill in and mail the coupon or call your nearest Armco Sales Office.



Pictured are six of the eight mill finishes available on Armco Stainless Steels. No. 2B and No. 2D Sheet Finishes correspond to No. 1 and No. 2 Strip Finishes, respectively. Not shown are the hot-rolled, annealed and pickled No. 1 Sheet Finish for industrial products and the new Armco SOFTONE Finish for Type 430 Stainless Steel strip. SOFTONE was developed to provide a soft, lustrous surface, yet avoid mirror-like reflectivity.

Small or intricately-shaped stainless pieces like these can be economically polished by the Armco Electropolishing Process.



ARMCO STEEL CORPORATION, 1569 Curtis St., Middletown, Ohio

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☐ These Armco Stainless finishes_____

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ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Let's Agree on . . .

Depreciation Reform

We have no realistic depreciation allowances on capital equipment in this country because industry can't agree on how they should be figured.

As evidence, the editors of STEEL present the results of a survey (Page 69) showing that about 40.1 per cent of metalworking executives want the bracket system advocated by the National Machine Tool Builders Association.

Some 37.7 per cent want a speedup of allowances such as the triple declining balance system sponsored by the Machinery & Allied Products Institute.

And 12.7 per cent want reinvestment depreciation allowances providing for the higher cost of replacing obsolete equipment. It is sponsored by the railroads, steel, copper, and coal companies.

Less than 2 per cent want special inflationary credits.

While a majority can't be mustered for any one approach to the depreciation problem, the survey reveals a general area of agreement. It can be the foundation for developing a single plan on which all industry can get together.

The depreciation rhubarb has been going on for years. It will go on for many more unless industry makes up its mind that it is going to present a united front.

How can our lawmakers be expected to know what action to take if industry can't tell them what it wants?

Irwin H. Such
EDITOR-IN-CHIEF

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What Depreciation Reform Does American Industry Want?

STEEL queried 918 metalworking executives and found . . .

40.1% want Bracket System

This would abandon the concept of useful lives. Substituted would be brackets or maximum and minimum yearly limits for 10 or 15 categories of depreciable property, as in Canada. Taxpayers could pick any year within the bracket.

37.7% want Speedup of Allowances

They would retain the present useful life concept but allow faster writeoffs—either by the triple declining balance method, or with an initial allowance of the British type and a double-rate writeoff, that would accomplish the same result.

12.7% want Reinvestment Depreciation

When the property is retired, you can deduct the difference between its value in current dollars and its cost at the time it was acquired. That amount, added to what was already written off, will compensate for the decline in the dollar. The deduction would be allowed only to the extent that an equivalent investment is made within two years of retirement. The method would work under the present schedule of useful lives or under a bracket system.

1.8% want Inflationary Credit

Accelerated depreciation would be allowed on property up to some specified amount, perhaps $50,000. A variation is already law. It allows a 20 per cent writeoff in the first year of acquisition if the property's cost doesn't exceed $10,000. It covers new and used property.

7.7% want Other Methods of Reform

Among a dozen other proposals, these stand out: Combine the bracket system with reinvestment depreciation; give the taxpayer the freedom to depreciate his assets any way he pleases, so long as he doesn't change his method.

Story begins on next page ▶

Executives Tell Why We Need Depreciation Reform Now

CARL L. HECKER, president
Oliver Corp., Chicago

JAMES H. HUNTER, president
James Hunter Machine Co.
North Adams, Mass.

NEEDED: A fresh approach to depreciation reform—one that the majority of industry will support.

To help you gage the currents and crosscurrents in industry's thinking on the subject, STEEL came up with a first. It asked 918 metalworking executives: "What type depreciation reform do you prefer?" The findings (Page 69) offer new insight into why one of industrial America's most frustrating problems, the rigid and archaic federal system of tax depreciation, is not being solved—why Congress has made only patchwork reforms.

The most important revelation from STEEL's survey: Industry's lack of agreement on what needs to be done. Note that even the most favored of the approaches — the bracket system—polled only 40.1 per cent of the votes.

America's system of tax depreciation, based on a schedule of useful lives that hasn't been changed since 1942, places a heavy burden on most equipment owners in writing off their capital assets for tax purposes. Average life allowed on machinery is 20 years, even though much of it becomes economically, if not physically, obsolete in a far shorter period.

What's more, our tax laws make no provision for inflation. Most other industrial nations do.

What's It to You?

Management's apathy is another reason why Congress is slow to enact reform. At hearings before the tax-writing House Ways & Means Committee last year, nearly all the witnesses were accounting and legal specialists. Few industrialists testified, and congressmen got little mail from businessmen seeking reform.

The same attitude was indicated in a few of the survey replies. "The subject is too complex to discuss," says a Tulsa respondent.

Many other businessmen concede that the problem is complex, but they think one object in reform would be to simplify the system so it can be more intelligently used by industry. "I believe the many complicated plans should be junked and a simple system adopted," says J. E. McIntyre, vice president and general manager of Sibley Machine & Foundry Corp., South Bend, Ind. Any reform "should minimize detail," cautions Malcolm Lamont, secretary-treasurer of Detroit Harvester Co., Oak Park, Mich.

"Depreciation reform is not of direct concern to us," claims the president of a Minneapolis firm. The large majority of respondents would challenge him. Hear N. T. Harrison, treasurer of Jones & Lamson Machine Co., Springfield, Vt.:

"Depreciation reform would reverse the recessionary trend in capital goods, stem inflation, provide a powerful weapon for the U. S. to combat Russia's economic warfare, and help to balance the federal budget."

Even if reform accomplishes only half that, it's of direct concern to you and you and you. The logic supporting Mr. Harrison's statement is the estimate that reform would boost capital goods sales, perhaps to more than $3.5 billion yearly. Better equipment would mean goods produced at lower or stable costs to stem inflation. If we could become more competitive in world markets, we could combat Communist economic warfare more effectively. Finally, the improved business would mean more profits and taxes, to help balance the U. S. budget.

"We'd like to have the bracket system because:

"It's simplest to administer.

"It keeps the federal revenue agent out of it.

"It requires less clerical effort.

"It requires less change in our clerical system.

"It has worked well in Canada."

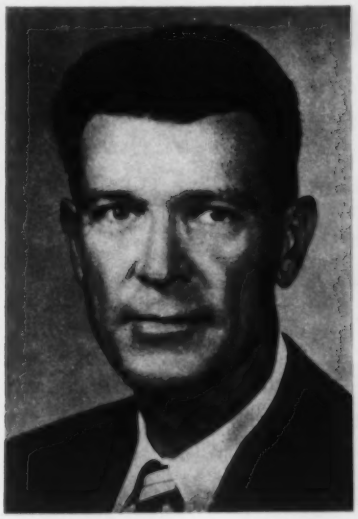
"As president of the American Textile Machinery Association, I have been actively seeking depreciation reform the past two years. Our group has worked with American Cotton Manufacturers Institute on revision of Bulletin F (and speedup of allowances). We are optimistic about some realistic revision."

R. C. TYSON, chairman,
finance committee
U. S. Steel Corp., New York

"I would support any of the more important proposals acceptable to Congress. However, it is my feeling that reinvestment depreciation would do more for industry and the country than would the others. This proposal follows closely the accepted LIFO principle adopted in the late 1930s for inventories."

J. A. RATERMAN, president
Monarch Machine Tool Co.
Sidney, Ohio

"It is relatively simple to take your case before the Treasury Department. If you can show that you replaced your machinery faster than shown in Bulletin F, you can have a special case. Of course, there is a good possibility that the small manufacturer would not take the time and effort to prepare his case."



PHILIP HAWKINS, president
Texas Steel Co.
Ft. Worth, Tex.

"The selection and application of depreciation rates should be left to the judgment of the taxpayer. The government should have the right to challenge such rates if they are not applied consistently, or if the government can prove that the rates do not bear a reasonable relationship to the useful life of the property."

How the Trouble Started

Before 1934, the Treasury Department paid little attention to tax depreciation.

The matter became important in 1934 because the U. S. needed money to finance the early New Deal projects. With so little to tax in the midst of depression, Congress proposed an arbitrary percentage reduction in all depreciation allowances. The Treasury countered with a proposal to raise the same amount of money "administratively," by making it hard for taxpayers to establish allowances. The proposal was adopted and embodied in Treasury Decision 4422.

"It was a revenue-raising device pure and simple," says Joel Barlow, Washington lawyer and president of Tax Institute Inc. "It had nothing to do with the merits of one system of depreciation over another."

As interpreted by zealous revenue agents, TD 4422 became a club to beat taxpayers into unreasonable patterns of depreciation. Obsolescence was virtually removed as a factor in arriving at the useful lives over which an asset could be written off.

The unhealthy situation was compounded by the 1942 edition of the Treasury's Bulletin F. It contains tables purporting to give the "useful" lives of all kinds of assets. The lives are too long because they were based on experience of the 1930s.

Since 1952, three partial reforms have come about:

1. Treasury regulations and rulings reduce to some extent the burden imposed by TD 4422.

2. The Internal Revenue Code provides for two new methods of depreciation. The double declining balance method and the sum of the years' digits permit you to write off the cost of an asset more rapidly during the first years of its life than under the traditional straight line method. They have no effect on the length of the period—the life—over which the total writeoff must be made.

3. In 1958, liberalized depreciation allowances were provided on a token basis for annual investments up to $10,000.

"While those were steps in the right direction, they solve in only a partial way the basic depreciation problem," says Mr. Barlow who also serves as counsel for National Machine Tool Builders' Association and other groups.

Under the present system, your company can be taxed at an actual rate of 80 per cent instead of the statutory rate of 52 per cent, charges Frank V. Olds, Chrysler Corp.'s assistant comptroller. The overtaxing is primarily a result of inadequate allowances for depreciation which force corporations to overstate their taxable income.

Favored Three

Where do we go from here?

An examination of reform meth-

How Metalworking Votes for Favored Three Methods of Depreciation Reform

Producers of . . .	Percentage voting for . . .		
	Bracket System	Allowance Speedup	Reinvestment
Machinery, equipment	**65.6**	**54.8**	**44.5**
Basic metals	**23.4**	**16.1**	**35.2**
Fabricated metal parts	**11.0**	**29.1**	**20.3**

Will You Help?

STEEL invites your comments and suggestions on how to mobilize support for the modernization of our archaic depreciation laws and regulations. We, in common with many industry managers, believe the updating of the depreciation system is a must if American industry is to continue strong.

In these pages are the results of a novel poll of metalworking executives. It shows their preferences for the types of depreciation reform they believe would be most beneficial and practical. We made the poll as an industry service. No one before had ascertained what a broad cross section of industry leaders wanted. If you can use the results, please do.

We questioned 918 executive officers in metalworking. Half are equipment builders. The remainder are users of capital equipment. Of course, the builders are also machinery users. Most companies queried employ more than 500, although a sampling of smaller companies was included.

STEEL's editors believe that a realistic proposal for depreciation reform, backed by an articulate and substantial representation of industry, can win approval by Congress. We believe depreciation liberalization is necessary if our industry is to hold its domestic and foreign markets. We believe such a program is essential to our national security.

Will you help?

—The Editors

ods is in order. Here are the three methods favored by respondents to STEEL's survey.

The bracket system got the most votes. It was devised by Mr. Barlow and is modeled after the Canadian method which has been working successfully. It would throw out the concept of useful lives embodied in Bulletin F. Depreciable property would be classified into 10 or 15 categories. Brackets of maximum and minimum useful lives would be given; taxpayers would be allowed to choose any useful life within the bracket without challenge. Most durable equipment would fall into the five-to-ten-year bracket. Depreciation would be figured on the basis of original cost.

The approach to reform with the second largest support is the speedup of allowances. It was devised by George Terborgh, research director for Machinery & Allied Products Institute, Washington. It's a faster writeoff device. Instead of the double declining balance method allowed in the 1954 reform, we would use triple declining balance. The Bulletin F schedule of useful lives would be retained.

As an alternate to the triple-rate approach, MAPI suggests the British method (depreciate by double-rate declining balance and, in addition, allow a first-year writeoff of 25 per cent for equipment and 12.5 per cent for buildings and structures).

The triple approach gives a gradually building impact. The British method starts with a bang.

The approach with the third largest support is reinvestment depreciation. Its principal architect is Maurice E. Peloubet of the New York accounting firm, Pogson, Peloubet & Co. It works like this:

In the year in which a depreciable property is disposed of or otherwise retired from service, you would determine the current dollars needed to replace that particular asset by referring to a price index.

The difference between the original cost of the asset and the original cost adjusted to current price levels would be available to you as a deduction to the extent that an equivalent investment is made at the time of or within two years of retirement. The amount written off in the first year would be deducted from the depreciable basis of the new property.

What Can We Do Now?

Congress will not vote depreciation reform this year or any year unless it has convincing evidence that the majority in industry favor one approach.

A dozen bills referring to depreciation have been introduced so far. None is the thorough reform industry wants. Rep. Eugene Keogh's (D., N.Y.) measure calls for reinvestment depreciation but limits deductions to $50,000 in one year. Other bills refer to depreciation only incidentally.

Why the lack of activity on Capitol Hill? Two reasons: Rep. Wilbur Mills (D., Ark.), chairman of Ways & Means, hasn't scheduled any hearings. Treasury may bring in a reform bill, tied to its long awaited revision of Bulletin F.

Concrete action by industry will be aided if a proposed U. S. Chamber of Commerce meeting is held in the next six weeks. Chamber officials agree that industry needs a united front—either in support of one of the more popular approaches already devised or in support of a new one that probably would include features of the three favored by STEEL respondents. Here are some of their suggestions:

• H. E. Tower, controller for Beloit Iron Works, Beloit, Wis., says: "It is necessary to have a combination of a speedup of allowances as well as a more modern useful life schedule."

• Many favor using reinvestment under a bracket system.

• Gerald Carlisle, secretary and treasurer of Micromatic Hone Corp., Detroit, wants this provision incorporated into the bracket system or allowance speedup: "Consideration should be given to changes in production levels. Let a corporation take 75 to 125 per cent of its computed depreciation based upon its production. At a full one-shift operation, 100 per cent would be taken. At anything less than 75 per cent of one-shift capacity, 75 per cent would be taken. At anything over 125 per cent of one-shift capacity, 125 per cent would be taken."

• This is the first in a series of articles on depreciation reform that STEEL will carry in the next several months. An extra copy of this one is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Big 3 Ready Small Cars

They'll introduce one 1960 model apiece. GM's is scheduled to debut in mid-September, Ford's perhaps in late September, and Chrysler's early next year

THE RASH of speculative stories on small cars that has broken out in newspapers is enough to make even automakers' heads swim. A casual count on the basis of these rumors shows that GM is supposed to introduce at least three small cars, Ford two, and Chrysler one or more. This must be fascinating news to the heads of these companies who as of now are planning on introduction of one light car apiece in 1960.

• GM—Chevrolet's light car tentatively is scheduled for dealers' showrooms between Sept. 14 and 21, STEEL's sources say. Its unitized body is on a 106-108 in. wheelbase. The engine still is a flat opposed, 6-cylinder job mounted in the rear. It will be about 120 hp and is similar to the Porsche design although this particular model has been under development at GM's Technical Center since 1955. Gray iron cylinders will be sandwiched between aluminum head and crankcase.

GM's forthcoming Slimline Hydra-Matic will be optional. Contrary to published artist's renderings, the car does not resemble Renault's Dauphine. Insiders suggest it's most similar to the 1960 Chevrolet without the fins. Front and rear bumpers are interchangeable. Two door and four door models will be offered initially and a station wagon also is programmed. Weight is around 2300 lb. The car reportedly will be assembled at Chevrolet's Willow Run, Mich., truck plant.

It is true that the corporation has several other light car designs in its shops. They would use the Chevrolet light car body with different sheet metal, and would be marketed by Oldsmobile, Pontiac, and Buick dealers. None of those has been scheduled as 1960 models.

• Ford—Despite the alleged quote by Henry Ford II, company president, that Ford will build a small car, the company last week would only repeat its original statement that it is studying the small car market and will be ready to move when, and if, conditions warrant it.

Ford Div.'s unitized light car is supposed to appear the last week of September or the first week of October, according to one source. It's been reported as having a 109 in. wheelbase and a 182 in. overall length, but two company men still maintain the wheelbase is 108 in. The car weighs between 2600 and 2700 lb. Similar to the English Zephyr, it has a T-bird roof line.

The engine is a reworked gray iron job with overhead valves. It has 144 cu in. displacement. Differential is in the rear. Ford's two stage, automatic transmission will be optional. Suggested retail price is reported to be around $1950. Production will start at Ford's Lorain, Ohio, plant.

Reports that Ford's second light car will appear in the 1960 model year are not true, say informants. What is planned is to phase out the present Edsel after 1960 and bring out a second light car under the Edsel name for the 1961 model run. This car will use the Ford Div. light car body. If all goes well, it will have a 6-cylinder aluminum engine.

• Chrysler—If no road blocks appear in its crash program, Chrysler could introduce its light car in January, 1960, but the word is that April probably will be the month. Chrysler's entry in this field also will be unitized. Initially, it will use Plymouth's reworked 6-cylinder powerplant, but ultimately it's to be powered by a 6-cylinder engine with an aluminum diecast block. A redesigned, two stage, automatic shift is underway. The car is reported to be in the 106-108 in. wheelbase class. A second light car for Chrysler is at least two years away.

Batteries are in trunk of prototype; they'll be in center of new electrics

Electric Autos Come Back

BATTERY POWERED AUTOS may soon be in the second car category.

Cleveland Vehicle Co. is developing an electric which will be out of the prototype stage by June 1. The research and development project is underwritten equally by Cleveland Vehicle, Atlantic City Electric Co., Electric Storage Battery Co., Detroit Edison Co., and Maust Coal & Coke Co. American Motors Corp. supplied a Rambler American for the project, but AMC officials deny interest in selling or marketing such a vehicle.

Cleveland Vehicle's president, Walter S. Thomas, says the six passenger car will have a top speed of around 40 mph and a range of about 100 miles.

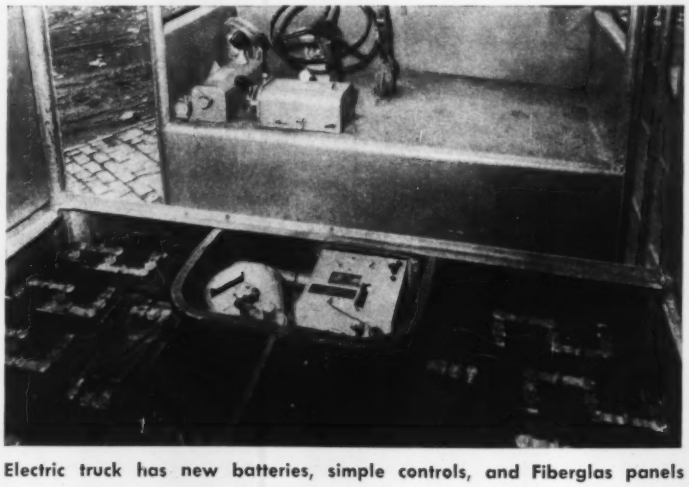
• **Design Features** — The car is slated to feature a glass fiber body on a unitized tubular steel chassis. (For every 500 lb reduction, 5 miles is added to the car's range.) A series wound, 6 to 7 hp motor will be powered by a revolutionary lead-acid type battery now in development at the Philadelphia Industrial Div. of Electric Storage Battery. The battery's developer has cut the weight in half (from 2250 to 1100 lb) but retained the 250 ampere-hour, 85 volt capacity of the 44 cell unit. A liquid propane heater will be optional.

• **Tentative Price**—Though production and marketing arrangements haven't been ironed out, Mr. Thomas believes that the car will sell for about $1835. The battery may become a rental item. Possible figures: $20 a month for five years and $10 a month for the remainder of the battery's life (perhaps seven and one-half to eight years).

Mr. Thomas says that heavy, inefficient batteries and complex charging gear led to the defeat of earlier electrics. The recharging problem has been whipped with a silicone diode rectifier which can be bought, rented, or leased. It takes the 12 x 6 x 6 in. unit 8 hours to fully recharge a battery—you just plug the recharger into a 110 volt household outlet. During idle periods, the owner can place a trickle of electricity on the battery to maintain its charge.

• **Advantages** — The new electrics can be kept running for about 1 cent a mile (at 1 cent per kw); insurance may be lower; tires and batteries will last twice as long (because of smooth pickup and low speeds). There are no fumes; operation is almost silent; and the controls are simple—a steering wheel, a brake pedal, and a control lever which serves as a combination hand throttle and gear shift. Five speeds forward and reverse are possible.

• **Trucks Ordered**—Cleveland Vehicle has orders for 42 electrically powered delivery trucks; the first



Electric truck has new batteries, simple controls, and Fiberglas panels

five are due out of production Mar. 15. Mr. Thomas says that 20 are slated for bakeries, and the others are for dairies and utilities. About 225 lb of 14, 16, and 18 gage steel tubing are used in the unitized chassis. Six molded panels of Fiberglas make up the body; and Styrafoam insulates the vehicle. All steel is below the center line of the body as are the 350 ampere hour battery and 10 to 12 hp motor, which places the center of gravity near the axle line. This design feature limits body sway. Wheelbases for the seven models run 72 through 107 in. Through a newly designed steering mechanism, the trucks have a 37 degree steering angle; the 72 in. truck can nearly turn in its own length—no mean advantage in congested traffic.

The trucks feature four corner (125 lb) pneumatic suspension, hydraulic shock absorbers, tubeless tires, and limited slip differentials. The pressed steel wheels may be replaced with aluminum or magnesium types to reduce weight.

With standard equipment, the trucks will be sold for $2500 to $4500 f.o.b. Cleveland. But Mr. Thomas might lease or sell trucks and batteries, depending on dealership arrangements. The vehicles will carry their own weight (1000 to 3000 lb) at about 25 mph.

• **California Entry**—Another electric car is being made by Stinson Aircraft Tool & Engineering Co., San Diego, Calif. First five models of the three passenger car are due for delivery this month. Specifications: 58 mph, 100 mile range, two 3.2 hp motors, and a glass fiber body. The retail price is $2800; 55 utilities have ordered 71 at $2200 each. Stinson is principally a manufacturer of ground support gear for jet aircraft.

Republic Leases R&D Space

Republic Aviation Corp., Farmingdale, N. Y., leased 30,000 sq ft of floor space from the Fairchild Engine Div. at Deer Park, N. Y. It will house its Research & Development Engineering Dept., pending completion of a $14 million research and development center next January. The company has undertaken a $35 million R&D space program.

Chemical Plant Construction 1958–60

Use Category	Millions of Dollars	Per Cent of Total Expenditures
General organic chemicals	801.4	24
General inorganic chemicals	797.2	24
Plastics and resins	392.7	12
Synthetic fibers	254.2	8
Petrochemicals	239.8	7
Special metals	174.8	5
Laboratories	157.1	5
Fertilizer chemicals	115.8	4
Synthetic rubber	53.5	2
All other	307.2	9

Source: Manufacturing Chemists Association.

Chemical Construction: $1.5 Billion in '59–60

SPENDING for chemical production facilities will total $1.5 billion during 1959-60, says the Manufacturing Chemists Association. The figure includes nearly $1.1 billion for construction underway and $464.1 million for projects to be completed before 1961.

A record $1.8 billion was spent last year.

The drop is not considered alarming. Reason: Long term goals established after World War II to meet demands for the projected population increase and a rising economy are being realized to a large extent. The average annual new plant and equipment investment has been over $1 billion for the last 13 years.

• **Steady Growth Foreseen**—Most industry leaders expect new product demand will result in a continued steady expansion of chemical producing facilities.

Preliminary returns indicate 1958 sales will total $23.2 billion, only 0.7 per cent below those in 1957, a record year.

The MCA report is based on activity within the chemical industry and on chemical operations of firms associated with other industries. Costs of foreign and government financed construction, office, warehouse, and other separate facilities are excluded. So is the installation or modification of equipment in existing plants.

• **Texas Leads** — Expenditures for 1958-60 represent 802 projects in 43 states by 287 companies. Last year, Texas, Louisiana, and California had the highest investments. (Leading producing states: New Jersey, Texas, New York.) The West South Central led the nation in total construction by region, followed by the South Atlantic States, and the East North Central area.

ALFRIED KRUPP

Krupp Breakup Dubious

Germany's new role in Europe and another delay in the disposal of the industrial combine lead many observers to believe Krupp will rise again to pre-eminence

A COMMISSION set up by the U. S., French, British, and West German governments will review agreements to break up the famed Krupp steel and coal combine. It is, in essence, a granting of Alfried Krupp's request for a one year delay in disposing of his industrial empire.

It is the second extension granted the sole owner of the huge enterprise.

The sale deadline for the big Essen steel plant, Huetten und Bergwerke Rheinhausen A. G., was in January. Its price has discouraged buyers. Disposal dates of other Krupp properties come later this year.

Herr Krupp continues to do business as usual. He is planning a merger with the Bochumer Verien which would boost his share of West Germany's steel production from 9 to 16 per cent.

• **Krupp Income**—Because he shys from publicity, the financial condition of his organization is difficult to determine. His last financial statement, issued in 1956, reported domestic sales of $727.2 million, an 18 per cent increase over 1954-55. Export business had reached $87.4 million, a 30 per cent gain. Total: $814.6 million.

German sources estimate Krupp's 1957 gross income at $816 million, a figure which was probably exceeded last year.

• **Magic Name**—The Krupp Works, synonymous with Germany's military might in the eyes of her enemies, has endured a dismantling assault at the end of each of the World Wars. The first failed. The second, it is agreed, is failing.

The survival of the 147 year old dynasty, once selected as Hitler's model enterprise, can be attributed to several reasons:

First, occupation authorities could not be indifferent to Germany's economic state and were obliged to put some of the Krupp establishments to work.

Second, there has been a drastic realignment of loyalties in Europe, necessitating the encouragement of German productivity and friendship.

Third, the loyalty of Krupp employees is enduring. In some families, several generations have worked for the company. There is good reason for such loyalty. Krupp's worker's pension fund goes back to 1858. A worker's housing scheme started in 1861. The Krupp hospital was opened in 1871.

The firm's interest in its workers has not declined. In 1956, the 45 hour, five day workweek was established and 883 new workers' dwellings were completed in Essen.

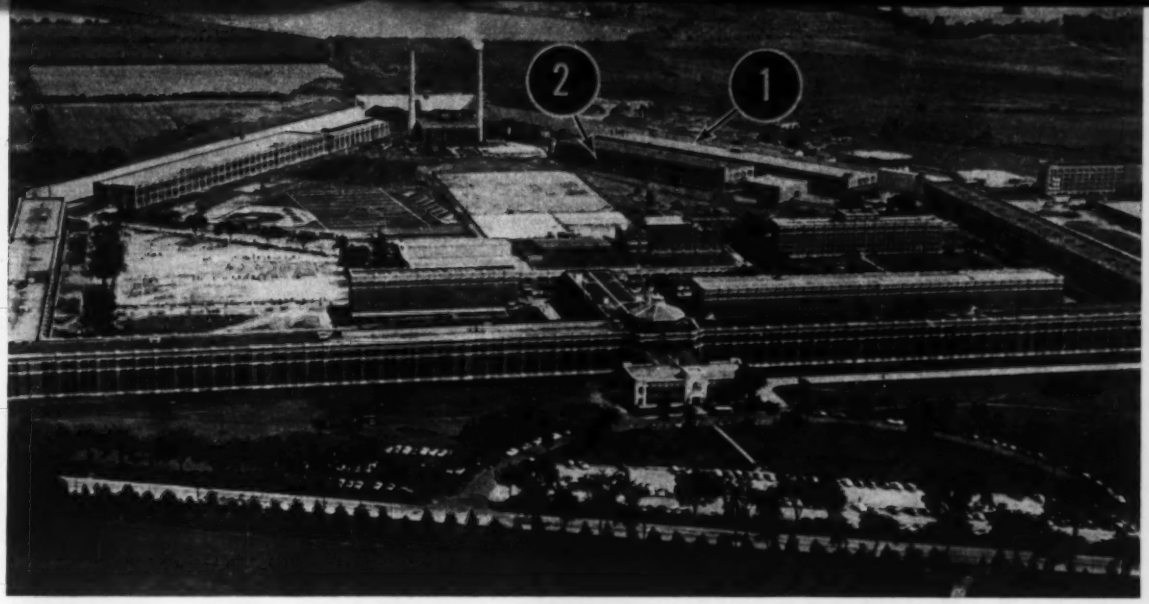
• **Changing Scene**—The Krupp star isn't as bright as it used to be. After World War II, the facilities of the vertically integrated combine were, to a great extent, disabled or nationalized. Herr Krupp was jailed by the Allies.

But the organization drove on. With the core of its production facilities wiped out, the engineering end of the business branched out more extensively than ever.

Krupp is no longer the biggest German industrial firm, a giant in coal, steel, and steel processing. It is primarily a general engineering company, offering a variety of products and services.

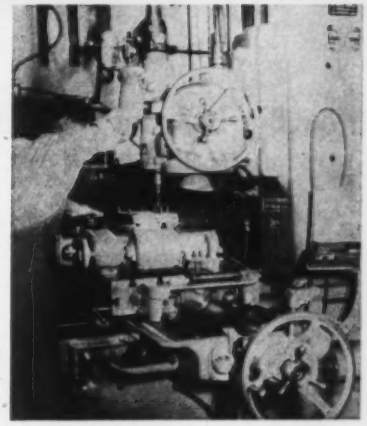
The Allies, unable to decide whether Alfried Krupp was a war criminal, released him in 1953 with the agreement that he would get out of the steel and coal business.

• **The Future**—Because of Herr Krupp's attitude and the changing situation in Europe, it appears that the new combine is here to stay.



World's largest walled prison contains two huge metal stamping plants which are indicated by the arrows. Inside, they look like any other plant

State Prisoners Turn Out Variety of Metal Stampings



Jigs and fixtures are built in the prison's completely equipped machine shop which is said to equal any installation in free society

METALWORKING is everywhere —even inside state prisons. At State Prison of Southern Michigan in Jackson, 330 inmates file into two buildings each weekday at 7:15 a.m., punch a time clock, then man modern machine shop and stamping equipment.

They are part of the Michigan State Industries plan which was established at the prison for three main reasons:

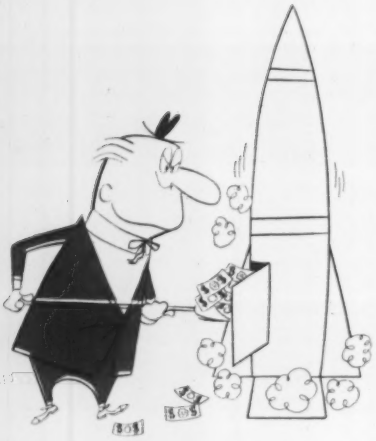
Provide employment for about 1400 inmates, offer the men an opportunity to learn a trade, and to save taxpayers money.

• **No Marketing Problems** — The two "captive" stamping plants supply 83 counties and some 850 cities with license plates and about 2000 types of road signs. They also make metal furniture for city and state institutions. Plant No. 2 is the license plate division. Among the many items turned out in Plant No. 1 are: Filing cabinets, office valets, lockers, steno chairs, beds, bunks, wastepaper baskets, coat racks, and road signs. Blueprints for all jobs are prepared in a well equipped drafting room. Special jigs and fixtures are turned out in the machine shop.

• **Offers Higher Pay**—Though production figures aren't disclosed, comments from prisoners who have worked similar jobs outside the pentagonal walls indicate that production standards and equipment are equal to those in stamping plants throughout the U. S. Pay is a little higher than the 15-cent-a-day average for most prison jobs.

There's evidence of humor within the walls. A safety sign, posted on one of the embossing presses, reads: "DANGER—you are fired if you work this side of press."

Combination and storage lockers are formed on a Cincinnati brake by one of the inmates. Other parts, except locks, are made in the prison



How Big Is Space Business?

HOW MUCH BUSINESS is there for U. S. industry in space probes and satellites? The industrial effort needed to make 1000 Atlas missiles is about equivalent to the manufacture of 5000 Cadillacs. That number of Cadillacs would be a small percentage of total automotive capacity. The 1000 Atlases similarly represent a small part of capacity in the aircraft-missile business.

Dr. Homer Stewart, planning chief for National Aeronautics & Space Administration, figures that the Atlas (as a space rocket, not as a war missile) should cost 50 times more than the Cadillac. The first Vanguard and Explorer cost much more, in terms of the payload launched, because of the development work required. Dr. Stewart sees space vehicles eventually delivering payloads into orbit for $300 per pound. Payload costs will run $100 to $1000 per pound, depending upon the scientific grade of the equipment involved. Add to that the launching, tracking, and data-handling equipment needed, and you arrive at a healthy dollar picture.

NASA Budget To Quadruple

NASA and its military counterpart, Advanced Research Projects Agency, may spend about $500 million this year and about $800 million next year. In two years, NASA alone may spend more than $1 billion a year, perhaps four times its current budget, says NASA.

All this money, however, must be related to the Cadillac comparison in the sense that the space industry will not require vast quantities of raw materials. Even the military requirements for ICBMs, says Dr. Stewart, "do not require a substantial fraction" of our industrial capacity. Also, we'll probably need fewer space vehicles than military rockets. Instrumentation production runs will be "substantially smaller" than the number of vehicles produced.

Space business will be similar to atomic business in size and quality for a long time. But the industry's contributions may prove far more important to all U. S. business (better communications and weather forecasting, for example) than what it will mean in terms of production volume.

Cheaper Rockets Are Here

NASA reports significant progress on a "poor man's rocket." The Scout is comparatively cheap, simpler than those we now use, and has a high degree of reliability. It may cost half as much as the Thor (which runs from $500,000 to $1 million).

The Scout will be capable of putting a 150 lb payload in orbit. Basically, it's a modified Jupiter but all four stages are solid fueled. (Fast developments in solid fuels are closely connected to a less costly space effort.) Other rockets under development include Centaur (three stages consisting of a modified Atlas, a lox-hydrogen second stage, and a solid fueled third stage), and Vega (similar to Centaur, but having a lox-kerosine second stage).

The Titan will be the second stage of a 1 million lb thrust rocket which NASA is planning. A 6 million lb thrust rocket is farther away. This tremendous power pack will be made by clustering 1 million lb thrust rockets—again the cheaper way into space.

Two SBI Act Loans Made

Under provisions of the Small Business Investment Act (passed late last session), the Small Business Administration says it has loaned money to Wagener Holding Co., Wagener, S. C., and Barstow Industrial Development Co., Cartersville, Ga. The two firms will loan construction money to small businesses.

Neither of the firms is connected with metalworking, but the SBA announcement is a good sign that the program is off the ground.

Industry Asked To Help Plowshare

Project Plowshare (the peaceful use of atomic bombs) is in need of funds. The Bureau of Mines wants to try a nuclear device in a western oil shale formation. Seventy oil and chemical firms have been asked to put up half the $2.5 million cost of the program. Richfield Oil Corp. has been reported dickering with the Canadian government for a device to explode in Canada's oil tar sands.

Iron Ore States Want Action

Senators from North Dakota, Montana, South Dakota, Minnesota, and Wisconsin are asking the Office of Civil & Defense Mobilization to survey the iron ore situation. Growing concern about imports of ore is the reason. They want OCDM to look into better ways of concentrating Mesabi Range ore and taking advantage of the Dakotas' lignite fields. A further step: If the St. Lawrence Seaway could be kept open year around, bauxite could be brought into the Dakotas for reduction to aluminum at the lignite fields.

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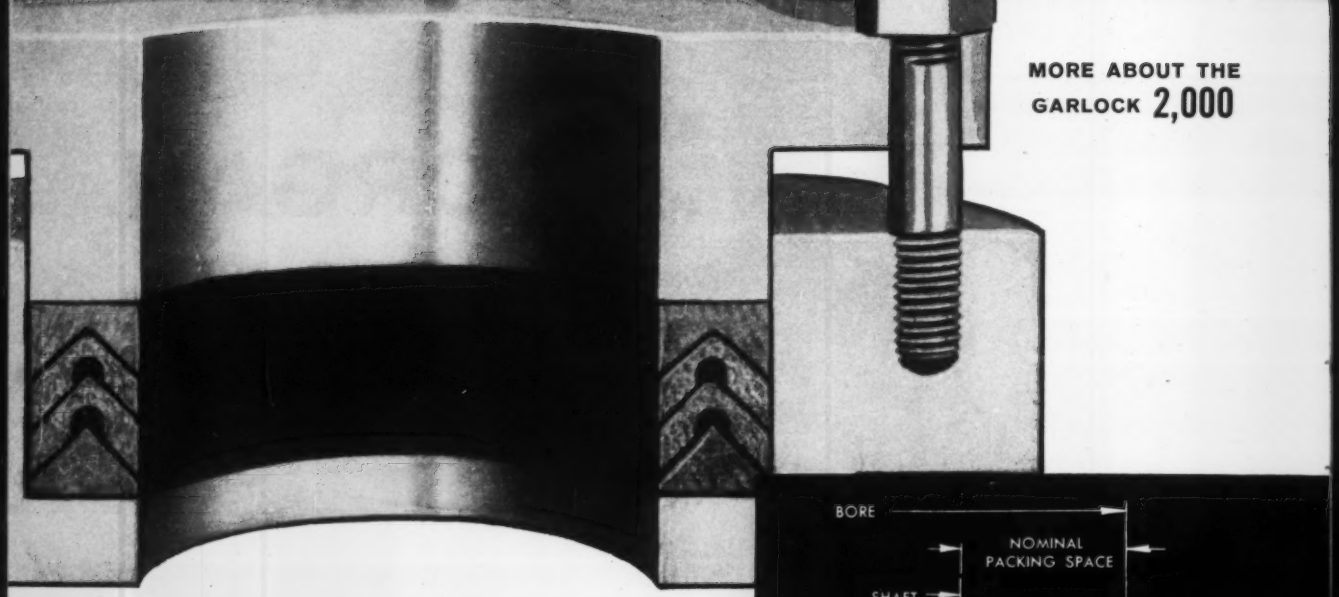
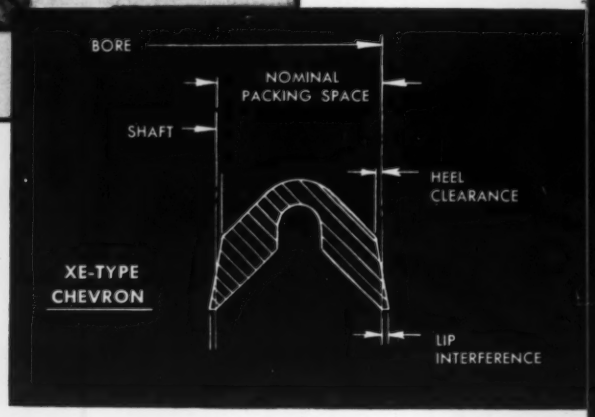


MORE ABOUT THE
GARLOCK 2,000



HOW LIP INTERFERENCE AND HEEL CLEARANCE IMPROVE CHEVRON* PACKING DESIGN

There are many reasons why users prefer famous Garlock CHEVRON Packings for sealing rams or rods on hydraulic systems. Design refinements indicated in the drawing above are just two examples:

Heel clearance for easy installation. Experience has shown that unless adequate clearance is provided at the heel of a V-type packing ring it can be very difficult to insert in the stuffing box. The heel clearance on Garlock CHEVRON Rings has proved to be the ideal for easy installation without disturbing the unique advantages of the CHEVRON design.

Lip interference for sealing at low pressures. If the lip of a V-type packing is made exactly to nominal size, and all the clearance taken at the heel, leakage past the lip often occurs at low or zero pressures. On the other hand, too much interference at the lip generates excessive friction resulting in scoring and wear. The lip interference on Garlock CHEVRON Packing is your assurance of minimum friction and positive sealing at all pressures.

There are many other design advantages of Garlock CHEVRON including its hinge-like construction which automatically compensates for pressure changes. If you have a sealing problem involving lubricants, liquids, or solvents at temperatures ranging from −320°F to +600°F, why not find out more about the many forms of Garlock CHEVRON Packings available.

CHEVRON Packings are another important part of the Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals for all your needs. Call your local Garlock representative or write for Folder AD-115.

*Registered Trade Mark

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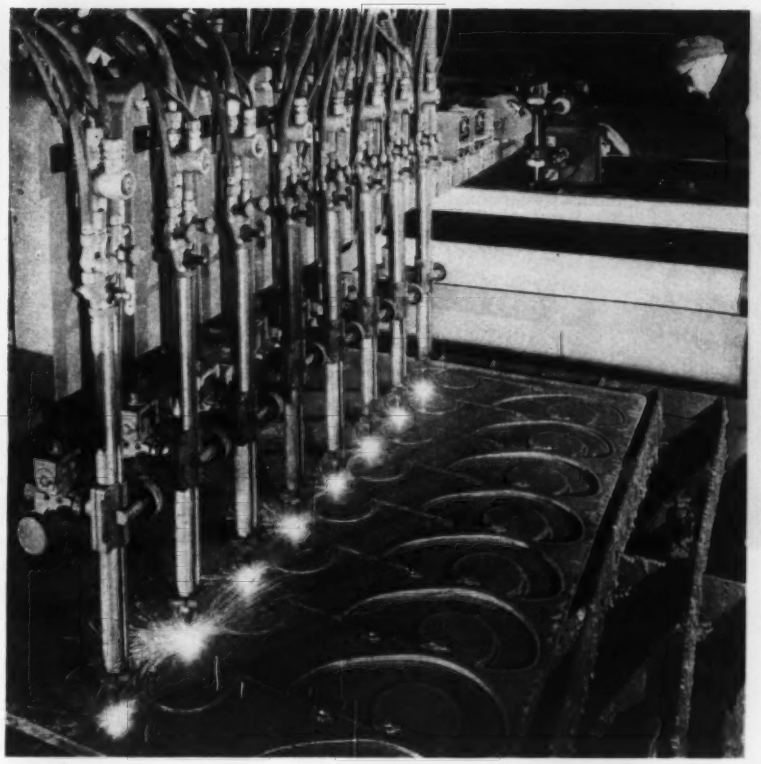


Sales of Gas Cutting & Welding Equipment

(In millions)

*1959	$40
*1958	35
1957	43
1956	42
1955	31
1954	27

*Estimated.

Air Reduction Co. Inc.'s Travograph oxygen flame cutter is a multiple torch production machine, guided by the electronic tracer at right

Gas Tools Ride the Uptrend

PRODUCERS of gas welding and cutting equipment expect sales this year of $38 million to $40 million as metalworking picks up generally.

If the equipment makers do $40 million worth of business, they'll score a 14.3 per cent gain over 1958. That's the year which saw the first major break in a long uptrend.

• **Production Tool** — Gas welding and cutting are at work in virtually all branches of metalworking — autos, aircraft, ships, railroads, tanks, tubing, steel service, sheet metal fabrication. All are showing more life than a year ago.

Improvement this year, as in recent years, will be reflected more in cutting than welding. Estimates show that welding and torch cutting account for about 10 per cent of all high purity oxygen produced and that cutting alone accounts for eight or nine-tenths of this figure. Some producers believe that gas welding this year will show a further dip, in relation to other major welding processes, despite the fact that it continues to be used in most sectors of metalworking.

• **Repair Tool**—Broadly, gas welding is used as much for maintenance and repairs as for production (some insist much more). Flexible and mobile apparatus, manually operated for the most part, is required for maintenance and repairs. Production requires automatic equipment and includes such important applications as continuous gas welded tubing. Gas and electric welding are used in conjunction with one another in most production applications.

In gas cutting, the emphasis is clearly on production, as in steel mills (largest users of gas for cutting and similar operations) and in other plants where multiple shape cutting is required. Automatic cutting machines often are custom built, with standard components sometimes used to round out the general assembly.

• **Distribution**—More than 60 per cent of gas welding and cutting equipment units are sold through distributors. Sales of the larger cutting machines are usually direct. But torches, regulators, small cutting machines, and safety equipment are sold off the shelf, largely through distributors.

There are only four or five major manufacturers of gas welding and cutting machines and accessories. But there are many makers of related items. Over 30 companies make tips; 27 produce torches, and 25 build small flame cutting machines. Price competition is sharp on most items.

Acetylene (suppliers number more than 70) is the most important fuel but natural gas is reportedly making steady inroads.

4,769 years to arrive ACCURATE HYDRAULIC

122 out of 124 hydraulic press brakes in U.S. aircraft industry are PACIFIC

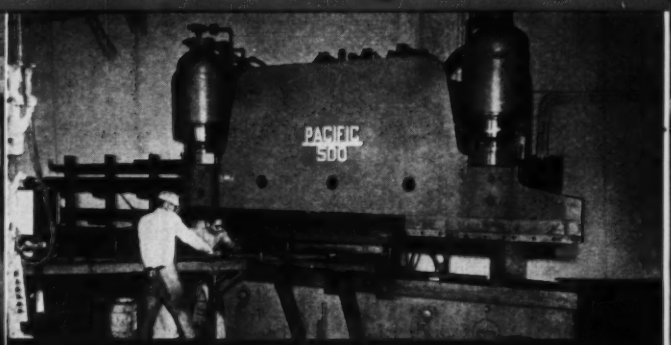
Aircraft manufacturers work to the closest tolerances of all industries in metal forming. Douglas Aircraft Company, Tulsa, Oklahoma, with 8 Pacific Brakes (above) is typical of the airframe manufacturers who have selected Pacific for its precise accuracy.

924 PACIFIC Brakes, representing over 95% of all hydraulic press brakes in use today, have operated for an aggregate of 4,769 years to test and confirm PACIFIC designs that have established hydraulic press brakes as far more profitable to operate than mechanical brakes. However, only PACIFIC has precise accuracy, versatility, high speed and dependability that comes from years of experience in manufacturing, developing and improving this unique machine. It is the only hydraulic press brake in daily operation that is actually air bending, straightening, deep drawing, blanking, and doing heavy punching. Accuracy within thousandths of an inch (greater than with any mechanical or other hydraulic brake) repeats itself on every stroke. Ram remains level regardless of location of work on the bed. PACIFIC sizes range from 60 tons to 1500 tons.

PACIFIC HYDRAULIC

Only hydraulic brake built for HEAVY PUNCHING

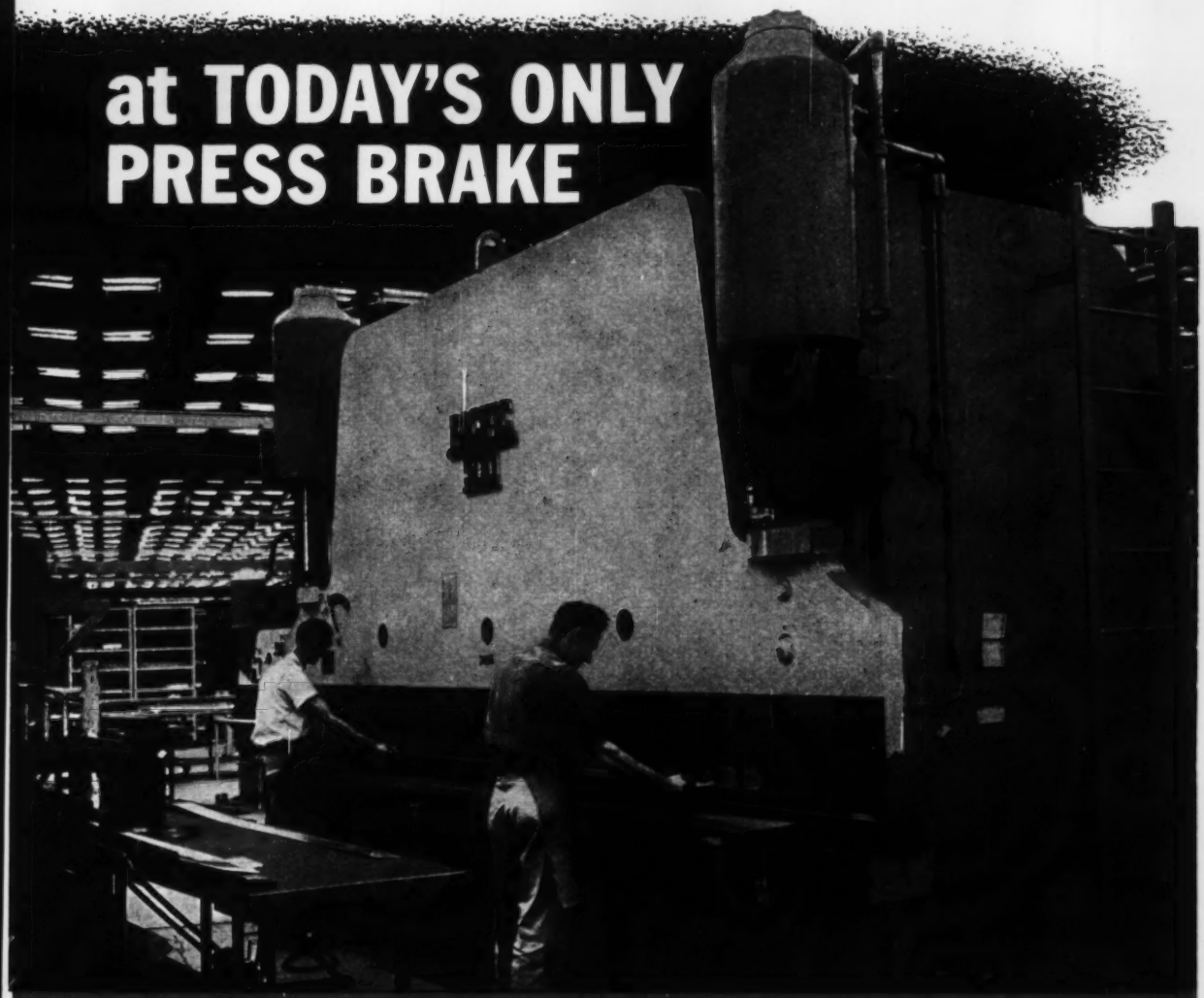
Pacific is uniquely designed to absorb heavy shock from punching in the hydraulic system rather than in the frame of the brake. Cushioned against shock, punch and dies stand up from 3 to 8 times longer than with mechanical brakes. Photo (above) shows 1" alloy steel plate being punched at earthmoving equipment plant.



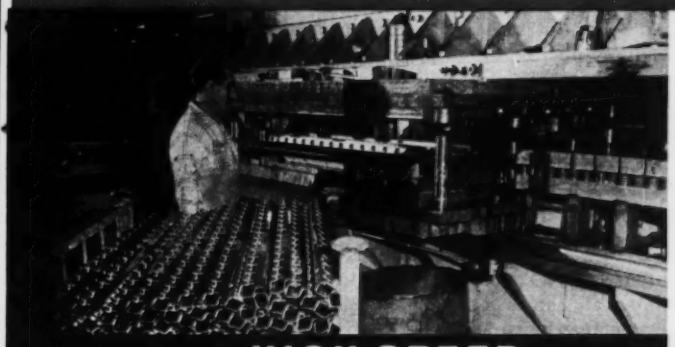
MAINTENANCE-FREE for years

Dependable, simplified electrical and hydraulic controls can easily be kept working continuously by any plant maintenance crew. There are no complicated electronic devices. In photo (above) at agricultural equipment plant, the 500 ton Pacific Hydraulic Brake shearing ¾" alloy steel plate with Pacific Shearing Attachment has operated continuously for the first 4 years at a cost of $5.22 in replacement parts.

at TODAY'S ONLY PRESS BRAKE



PRESS BRAKE



HIGH SPEED operation

Pacific adjustable stroke length can be shortened for rapid stroking. Automatic, self-leveling ram permits use of progressive dies across entire bed of press. The automatically-fed Pacific at automotive parts plant, which can cycle up to seventy 1½" strokes per minute, is forming 3780 operations per hour in the above photo. In virtually any operation, Pacific's high cycling speed equals or exceeds materials handling capacity.

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The Three Levels of

FEDERAL

These activities are fostered by the Air Pollution Control Act:

1. Research by the Public Health Service (Sanitary Engineering Center, Cincinnati).
2. Technical assistance to state and local governments and industry.
3. Collection and dissemination of data on the extent of air pollution.

STATE

Abatement responsibility under the federal act permits:

1. Interstate control (compacts between states may be

Bad Air Costs Us $7.5 Billion a Year

IS A CRASH PROGRAM to combat air pollution needed? The fact that 1000 delegates attended the Health, Education & Welfare Department's 1958 National Conference on Air Pollution indicates the seriousness with which some regard the problem.

Another sign: Simon Ramo, executive vice president, Thompson Ramo Wooldridge Inc., has told Congress: "We have developed a smog-reducing device for automobiles that we think is the most highly developed in the country. It appears now to be practical for low-cost manufacture and, hence, applicable to millions of automobiles (at least in one area of the U. S.)."

Health, Education & Welfare will spend $200,000 more in fiscal 1960 than it did in 1959 in seeking a solution to the problem. Spending has run over $4 million annually since 1958. Next year, "increased emphasis will be given to motor vehicle exhausts," says the department. It regards autos as a "primary source" of air pollution in heavily populated areas. Spending on auto research this fiscal year will reach $700,000.

• **Burden on Industry**—Whatever the sources (there are heated arguments about them), air pollution is certain to cost industry plenty of dollars in the future, and probably at a rising rate. Attention is being focused on the subject in the same manner that our water shortage is being pointed up (STEEL, Sept. 29, 1958, p. 58).

• **Effects**—Dr. D. A. Irwin, medical director, Aluminum Co. of America, says polluted air can lead to abatement legislation, requiring the engineering of equipment which must be installed "at great expense." Damage suits can bring additional expense: "Many plants have spent great effort and considerable money in investigating, negotiating, and settling damage claims; then there is the long, expensive litigation which occurs when a settlement figure cannot be arrived at."

Dr. Herman Hilleboe, commissioner, New York State Department of Health, comments: "Air pollution gnaws away at property values. This triggers a financial dilemma for communities faced with an erosion of normal tax yields. The more this occurs, the greater must industry be taxed to make up the community's fiscal debit."

Sen. Thomas Kuchel (R., Calif.) notes Los Angeles County has the power to order industry shutdowns and to halt auto traffic when smog reaches a certain density.

• **$7.5 Billion**—Oil industry has spent $66 million on air pollution control since 1956. Automobile Manufacturers Association guesses research in its industry is costing $1 million a year. Two member companies of the American Iron & Steel Institute have spent $84 million on air cleaning equipment since 1950. The total cost of air pollution equip-

Air Pollution Control

needed in areas like the Eastern Seaboard from Massachusetts to Virginia).

2. Setting of allowable air pollution standards.

(Research is too expensive for state and local governments to handle. No provision for such in federal act.)

LOCAL

Federal and state recommendations depend upon community action for implementation through:

1. **Leadership of established civic organizations.**
2. **Standards adopted through efforts of community leaders and industry executives.**
3. **Public information programs.**

ment and research is at least $1 billion annually. Dr. Mark Hollis, assistant U. S. surgeon general, estimates annual damage from uncontrolled pollution at $4 billion. Dr. Reuben Gustavson, president, Resources for the Future Inc., pushes the total annual cost to "at least" $7.5 billion, and adds that we probably have no accurate way of arriving at a figure since the problem is so extensive.

• **Some Payoff** — Many leading medical authorities have expressed the hope that the return on investment in control equipment, now small, can be made attractive enough to spur industry efforts.

Health, Education & Welfare says: "Recovery of a saleable by-product is the ideal solution." It reports a $12 million investment by 12 plants in Perth Amboy, N. J., has brought "considerable financial return, including recovery of 8000 tons of sulfur per year by one plant." And a market is developing for fly ash. The department says one power company using coal for fuel sold 105,000 tons of fly ash in 1957 for $1 a ton. It is used as filler in asphalt paving and in cement products.

The biggest encouragement to industry would be fast tax writeoffs for air control equipment. Gov. Edmund Brown of California is reported to be pushing hard on Capitol Hill for this, but the House Ways & Means Committee (which handles such legisation) feels it doesn't stand a chance.

• **Air, Air, Everywhere?**—If your community doesn't have an air pollution problem, you're one of the lucky few. Thirty-nine of New York State's 40 communities with populations over 25,000 have "serious" problems, says Dr. Hilleboe. Ten thousand U. S. communities probably are bothered to some degree, estimates Dr. Hollis. Yet only 400 cities collect data for study.

The problem is no longer just the soot and grit which we can see (visible pollutants in urban air have been steadily diminishing, says Health, Education & Welfare), but the unseen gases, and the new combinations created by gases mixing in the air, or the effect of sunlight on them.

We don't know what is happening to us when we breathe the stuff, but Dr. Leroy Burney, U. S. surgeon general, suggests we must clean the air anyway: "Before anyone had identified a single causative agent of epidemic diseases, farsighted leaders observed the association between epidemics and filth." Statistics on incidence of cancer are being used by medical men to push air pollution control, though many are not absolutely sure of the relation between the two.

• **Not Industry Alone**—Individuals and municipal services may account for one-third of a city's polluted air, reports Health, Education & Welfare. Space heating and refuse incineration are major sources. Those industries which rely most on coal (electric power companies and iron and steel plants) are rated large sources, but the department reports "great progress" has been made. In plants without dust collecting equipment, 80 per cent of the fly ash may go into the air. It can be reduced to 10 per cent with equipment now available, and could be cut to 2 per cent "with full application of existing knowledge," comments the department.

• **Due for Cure**—Problems still to be solved by the industry, says Thomas Wurts, director, Allegheny County Bureau of Smoke Control, Pittsburgh: 1. Electric furnace effluent. 2. Pushing and quenching of coke. 3. Blast furnace slips. 4. Cheaper methods of controlling open hearth effluents.

Short of increasing dilution of pollutants in the air (higher stacks, for example) or abolishing the offending source, industry can step up control efforts by seven means: Superior combustion chambers, scrubbing facilities, settling chambers, filters, mechanical separators, electrostatic precipitators, and counteractants.

• **Congressional Action?** — Senator Kuchel is sponsoring extension of the Air Pollution Control Act for an indefinite time without a ceiling on the funds to be spent. Originally passed in 1955, it called for a five year program and limited appropriations to $5 million annually. His bill has been discussed with Public Health Service officials. It will not contain any of the provisions hinted at by more excited air control enthusiasts.

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Detroit Plans 1960 Breakthrough in:

Chrysler's Dart hints at next year's forward look

Styling . . .

More fins. More headroom—other inside dimensions won't be changed.

Bodies . . .

Chrysler goes unitized. GM will follow. Lincoln will continue to use it.

Light Cars . . .

Chevy aims for mid-September introduction. Ford figures two weeks later.
Edsel won't come for a year.

GM Eyes Chrysler's Unit Body Plan

SPECULATION about small cars has overshadowed the fact that automakers still plan to build standard cars in 1960. Tooling for next year's models is on schedule, and it looks like the industry is again aiming for slightly earlier introduction dates. At least two lines are supposed to be unveiled in mid-September.

This week STEEL takes a look at 1960 styling trends and basic body changes that will affect automotive designs for the next several years. Next week we'll round up the reported changes in engines, transmissions, brakes, and other components that are expected to appear in 1960.

• **Chryslers Unitized** — The most significant change will be Chrysler Corp.'s switch to a semiunitized body. Because Chrysler has had a high degree of body standardization for several years, unitization lends itself readily to annual sheet metal changes at minimum cost. This is particularly true of the front end, where marketing men now feel changes must be made every year.

Chrysler's body will use a stub frame to mount the motor, suspension and fenders. The frame will be fastened to the front body sections. This will permit the company to utilize many of its present assembly methods and facilities. The approach will be closely watched by General Motors because it's a natural for GM's manufacturing setup where bodies are built by Fisher Body Div., and front end assemblies are made by each car division. There's no doubt in Motordom that GM will go to unitized construction — probably the stub frame type, and probably in 1961.

In its new body buildup, Chrysler will start with the floor pan. Quarter panels and other sections are joined at the rear by crossmembers, braces, and finished sheet metal. The cowl is fitted to the floor pan and trunk section. This body, minus the roof panel, moves along the line while upholstery, seats, and interior components are installed. Doors are hung and a finished top section welded in place. The stub frame, engine, transmission, and front chassis parts are then dropped into place. Front fenders are hung last.

• **Looks Lower**—Stylewise, Chrysler will not attempt to change its Forward Look theme, although it will lower the front fender line to give a more dartlike appearance to its cars. The fin line is supposed to start at the front fenders and continue to the tip of the rear quarter panels, which will be slightly lower.

Body dimensions aren't going to be changed much. One report has it that wheelbases will be identical to this year's models, but over-all length of Plymouths and Dodges will be reduced about 2 in. Chrysler will continue to use aluminum for its grilles, but it will not return to brushed aluminum wheelcovers in 1960.

• **GM Gets New Skins**—As anticipated, General Motors' lines will

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have new sheet metal next year, but basic bodies will remain virtually the same. The use of standardized body components saves GM enough so it can afford annual styling facelifts. Since bodies are little changed, dimensions won't be different from this year's cars. But one report has it that floor pans will be lowered about ½ in. and seats will be redesigned to give more headroom in the hardtop styles, without increasing car heights.

Insiders say Chevrolet will retain its quarter panel style but will modify it slightly to eliminate the present bat wing appearance. Oldsmobile is expected to use a more canted fin instead of the oblong shape it has now. Pontiac will remove the "Vs" on top of its quarter panels, and Cadillac reportedly will smooth off its shark tail tip on the quarter panels. Cadillac also will lose much of the chrome it had this year.

Front end sheet metal, particularly hoods and fenders, will be basically the same on all GM cars. Batteries of dual and triple headlights will be continued. At least two GM divisions besides Buick are returning to a zinc diecast grille. On all GM lines, the glass area above the beltline will be slightly increased, mainly by the addition of larger backlights, cutting down into what now is part of the deck lid. Two GM lines will offer swivel seats as optional equipment.

• **Ford Is Conservative**—Flat roof, conservative styling will remain the theme at Ford. Its refusal to follow an industry trend all the way is interesting. It may mark the beginning of an era in which each of the Big Three will develop distinctly different styling themes.

Ford Div. reportedly scrapped much of its initial 1960 model design and has created another style. Sheet metal is modified, but it won't look too different except for the rear quarter panels which are supposed to follow the gull wing look that Buick is using this year. While this sounds radical, company sources claim the fins aren't quite so pronounced . . . give more of a massive than a bladelike appearance to the rear end. Backup lights will be relocated.

Lincoln is expected to restyle the heavily sculptured areas around its wheels, to give a cleaner, crisper look. Roof lines will be unchanged. The car may be 3 in. shorter, says one source. Grilles and bumpers will give a broad appearance, but some of the massive effect will be gone as stylists try to flow the bumper farther into the front fender area.

Now that it has its unitized body lines on an economical basis, Lincoln will continue with unitized construction next year. (The Thunderbird will also continue it.) There's no evidence that other Ford divisions will attempt unitization through 1962.

• **AMC Restyles**—A major sheet metal facelift is the styling note for Ramblers in 1960. Basic body shells are unchanged, but front fenders will be flattened out and lowered slightly. It's reported that quarter panels are still finned, but the blades blend into the side panels and don't give the "tacked on" appearance that has characterized Rambler design. Roofs are flatter, and the word is the larger Ramblers will have a compound curved windshield. The car may be as much as 2 in. lower.

Wagons To Get Own Style

An interesting trend in station wagons is developing. As they take more of the market, it's likely that each manufacturer will develop a separate wagon body to be used for all its lines. Now they are adaptations of passenger car bodies. Increased use of interchangeable components for car bodies means that wagons will either be more limited in size or the adaptations will be more expensive.

If a separate body were used, carbuilders could make significant changes in styling and interior design that would make wagons even more useful than they are now. The industry is investigating such things as seats down the side, roll top roofs over cargo areas, different suspension systems and drives.

U. S. Auto Output

Passenger Only

	1959	1958
January	545,757	489,515
February		392,112
March		357,049
April		316,503
May		349,474
June		337,355
July		321,053
August		180,324
September		130,426
October		261,696
November		514,099
December		593,920
Total		4,243,526

Week Ended	1959	1958
Jan. 24	126,843	107,495
Jan. 31	119,678	104,359
Feb. 7	114,282	109,028
Feb. 14	115,491	101,656
Feb. 21	126,614†	89,977
Feb. 28	125,000*	91,508

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

Looking for Auto Business?

If you're a small manufacturer looking for a slice of auto business to fill up your shop, jot down these pointers culled from conversations with industry purchasing agents. Remember that automakers and their larger suppliers avoid parts that have a high percentage of inherent labor cost. They also tend to avoid subassembly parts.

1. Look for semifinished parts that can be put together on the final car assembly lines. Automakers don't go in for semifinished subassemblies.

2. Look for low volume parts that will not be repeated the following year because of model changes.

3. Look for parts that call for relatively small die cost. By the nature of their overhead, automakers prefer to put large volume jobs and parts requiring major die investment into their own shops.

What kinds of parts fill these requirements? Special brackets of all types, used to hang on everything from headlamps to instruments, are naturals. So are zinc and aluminum diecast parts that are used only for one model year or for low volume styles.

Another good bet: Special fasteners that may be used on small trim parts or underbody components. These parts change frequently and are sometimes needed because of last minute styling changes. They require few fasteners, but they're usually of a peculiar shape that calls for hand forming operations. Fastener makers tend to avoid such business.

N/D CASE HISTORIES

N/D achieves maximum axial and radial rigidity by matching two or three super-precision angular contact bearings having different contact angles. See figures 1 & 2 below.
FIG. 1
FIG. 2

Photo: courtesy Ready Tool Company

N/D Bearing Design Helps Live Center Maker Achieve Accuracy of .000050"!

CUSTOMER PROBLEM:

Live center maker requires bearing design that will help achieve . . . and maintain . . . live center accuracy of .000050", under combination radial and thrust loads.

SOLUTION:

After thorough evaluation of the problem, New Departure recommended N/D pre-loaded, duplex ball bearings. Extensive testing proved these super-precise ball bearings resisted combination radial and thrust loads with minimum deflection. The N/D ball bearings, with medium and high contact angles, are mounted duplex and positively clamped together to assure the optimum, pre-determined preload condition. As work expansion increases the thrust load, radial centering becomes more rigid and accuracy is precisely maintained . . . to less than .000050" total indicator run-out!

When you're working on new designs that call for high precision ball bearings, why not call on New Department? New Departure's consistent precision is your assurance of the ultimate in accuracy for your design. For more information, call the New Departure Sales Engineer in your area or write Dept. T-3.

Replacement ball bearings available through United Motors System and its Independent Bearing Distributors

NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

They're perfecting the Timken® steels you'll need tomorrow

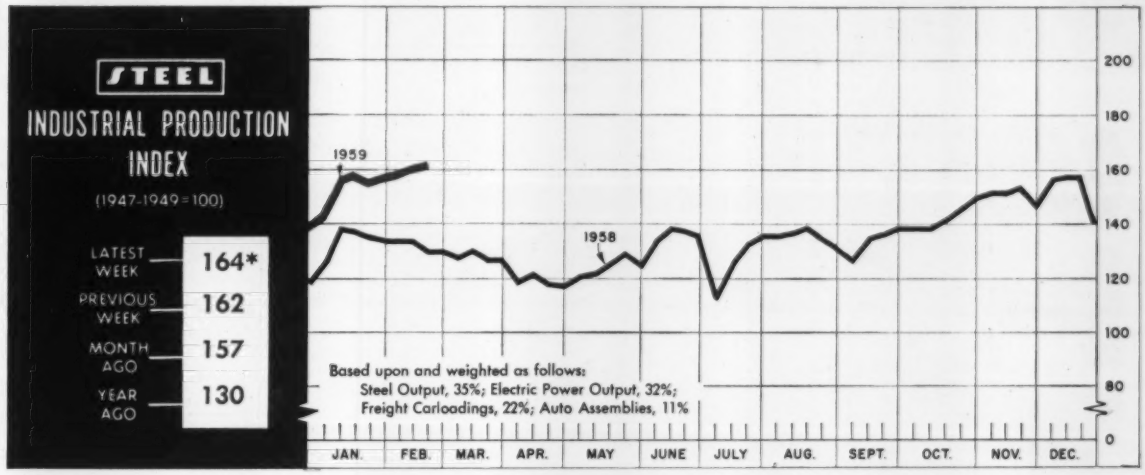
THE steels for the products and designs you're planning for tomorrow are being perfected today—here in the Timken Company's new Metallurgical Research Center. We use the newest, most modern facilities ranging from an experimental melting laboratory and an X-ray spectrometer to one of the industry's finest technical libraries to study and evaluate new steel compositions—solve customer problems. For example, in our new Vacuum Fusion Laboratory (shown above) new steels are analyzed for impurities present in minute quantities.

Work like this developed the Timken Company's "16-25-6" steel, the steel that helped keep jets flying—now helps get missiles off the ground. For the steels you'll need or the steel problems you may have, call upon our experts for help. They've been developing new steels and solving hundreds of tough steel problems for 30 years. Call or write the leaders in electric furnace fine alloy steel production, The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.

THE CREEP-STRESS RUPTURE LABORATORY. Here we test the resistance of steels to deformation at elevated temperatures —as high as 1800°F. Tests made here help perfect special quality steels used in such applications as today's revolutionary steam generating plants.

TIMKEN® *Fine Alloy* STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING



*Week ended Feb. 21.

Production Index Nears Record Level

STEEL's industrial production index (above) is bucking a trend. In four of the last five years, the trend line has followed a gentle downward slope from January to the usual spring outburst of activity. The lone exception was 1955, another recovery year.

Since the first full week of 1959, the index has gained 5 points, pushing the trend line to a preliminary 164 (1947-49=100) for the week ended Feb. 21. That's 34 points above the corresponding 1958 mark and only 4 points shy of the all-time high set in December, 1956. Within the next four weeks, a new high should be reached.

• **Three Reasons**—The five points needed to break the record should come easier than the preceding five for three reasons:

1. Steelmakers see no letup in the demand for steel until midyear. (See Page 170.) This segment of the index has added 8 points since the first of the year, and it will add at least two more by the time output climbs to the record rate of 2,525,000 net tons a week. This will happen before the end of March, some steelmen believe.

2. Freight carloadings, which have added one point to the composite since early January, will show a loss for the week ended Feb. 28 (Washington's birthday cuts into that week), but they will rebound and continue to show seasonal gains through the spring. Great Lakes iron ore loadings will swell the total in April and May.

3. Auto production has been a damper on production lately. But now that Chrysler Corp. is back on full schedule, this segment of metalworking should add at least one point to the index in the immediate future.

• **Favorable Balance** — The only factor in the index which will not be a positive influence in the near future is output of electric energy. A seasonal downturn following the

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,481[1]	2,449	1,475
Electric Power Distributed (million kw-hr)	13,100[1]	13,156	12,338
Bituminous Coal Output (1,000 tons)	8,255[1]	8,300	7,965
Crude Oil Production (daily avg—1,000 bbl)	7,150[1]	7,155	6,808
Construction Volume (*ENR*—millions)	$398.3	$346.2	$338.5
Auto, Truck Output, U. S., Canada (*Ward's*)	155,844[1]	150,019	114,930
TRADE			
Freight Carloadings (1,000 Cars)	570[1]	567	492
Business Failures (Dun & Bradstreet)	292	271	319
Currency in Circulation (millions)[3]	$31,205	$31,193	$30,642
Dept. Store Sales (changes from year ago)[3]	+8%	+9%	−6%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$24,323	$22,346	$25,276
Federal Gross Debt (billions)	$285.1	$285.6	$274.4
Bond Volume, NYSE (millions)	$32.3	$30.6	$23.0
Stocks Sales, NYSE (thousands of shares)	18,505	14,793	9,201
Loans and Investments (billions)[4]	$94.3	$94.9	$87.2
U. S. Govt. Obligations Held (billions)[4]	$31.6	$32.0	$26.3
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	218.1	217.3	201.7
All Commodities[7]	119.4	119.4	119.1
Commodities Other than Farm & Foods[7]	127.6	127.6	125.8

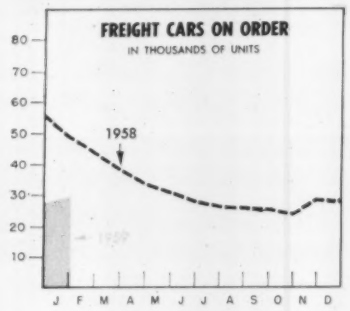
*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

WELDMENTS

ACME WELDING

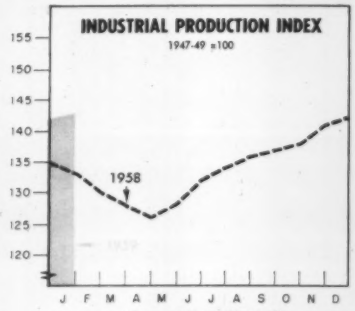
DIVISION OF THE UNITED TOOL & DIE CO., WEST HARTFORD 10, CONN.

Machine bases, components, environmental and test equipment, pressure vessels . . . welded fabrications of every kind. Extensive cutting, forming, welding, X-ray and gamma ray equipment. Qualified welders. All recognized codes. Send your drawings and specifications to us for prompt detailed quotations.



	Awards		Backlogs (end of month)	
	1959	1958	1959	1958
Jan.	4,007	401	29,470	48,787
Feb.	....	287	.....	43,750
Mar.	....	193	.....	38,027
Apr.	....	278	.....	32,908
May	....	1,370	.....	30,386
June	....	317	.....	27,757
July	....	376	.....	25,994
Aug.	....	1,773	.....	25,611
Sept.	....	1,580	.....	24,982
Oct.	....	781	.....	23,670
Nov.	....	6,295	.....	27,962
Dec.	....	3,830	.....	27,596
Totals	....	17,481		

American Railway Car Institute.
Charts copyright, 1959, STEEL.



(Seasonally adjusted)

	Total Production		Primary Metals		Metal Fabricating	
	1959	1958	1959	1958	1959	1958
Jan.	143*	133	125*	100	167*	159
Feb.	...	130	...	95	...	153
Mar.	...	128	...	91	...	150
Apr.	...	126	...	86	...	146
May	...	128	...	91	...	148
June	...	132	...	103	...	151
July	...	134	...	102	...	154
Aug.	...	136	...	109	...	156
Sept.	...	137	...	113	...	155
Oct.	...	138	...	123	...	155
Nov.	...	141	...	123	...	163
Dec.	...	142	...	122	...	165
Avg	...	134	...	105	...	155

Federal Reserve Board. *Preliminary.

holidays cost the composite three points. While this decline is expected to continue until the summer months, it will be minimized this year by the industrial recovery.

Weighing those factors, a record level should be posted in March or early April. If steel operations reach as much as 93 per cent of capacity—which some officials believe they will in June—STEEL's index could establish a high of about 170 before the summer slump sets in.

GNP To Set New Mark

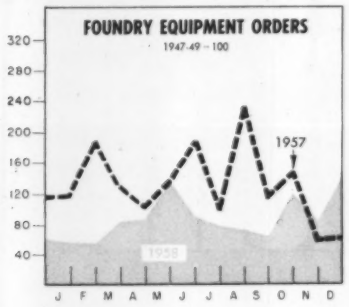
Strong industrial activity, brisk consumer buying, and government spending will push the gross national product to quarterly records this period and the next. The record (annual rate of $453 billion) was set during the fourth quarter of 1958. That brought the total for the year to $437.7 billion, says the Department of Commerce. The previous quarterly record ($445.6 billion) was set in 1957's third period.

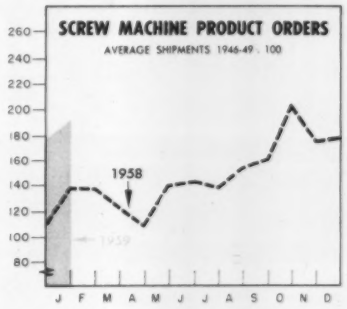
Before the strength of the recovery and the magnitude of the inventory turnabout became clear, this publication had forecast this quarter's GNP at an annual rate of $462 billion. The estimate appears to be short by as much as $3 billion. The rate could advance to about $474 billion in the second quarter. It will dip during the third quarter, depending on the outcome of steel industry wage negotiations, then rise to $475 billion or $480 billion in the fourth quarter, the best on record.

Business Community Grows

The recovery has also been reflected in a growth in the business community. During January, incorporations rose to a record high. Business failures rose seasonally but still fell below the year-ago mark, says Dun & Bradstreet Inc., New York.

January's total of 18,773 new firms topped the previous record set in December, 1958, by 2315. It was 43.5 per cent over the total for the corresponding 1958 month. Failures came to 1273 during the month, which was an 18 per cent increase over December. While failures were only six companies below the January, 1958, total, the rate dropped from 53 to 51 per 10,000 listed enterprises because of the constant increase in the size of the business community.





	1958	1957	1956
Jan.	57.9	117.9	195.6
Feb.	57.6	188.4	169.0
Mar.	85.9	127.0	152.7
Apr.	88.7	101.1	135.2
May	136.1	136.2	207.0
June	87.7	187.5	156.7
July	77.9	98.6	110.3
Aug.	74.1	231.3	188.3
Sept.	64.5	113.9	114.7
Oct.	118.9	145.3	122.2
Nov.	83.3	59.6	121.0
Dec.	137.0	61.4	115.6
Avg	89.1	130.7	149.0

Foundry Equipment Mfrs. Assn.

	New Orders		Shipments	
	1959	1958	1959	1958
Jan.	193*	138	187*	165
Feb.	...	137	...	145
Mar.	...	122	...	141
Apr.	...	108	...	141
May	...	139	...	134
June	...	142	...	133
July	...	138	...	124
Aug.	...	154	...	142
Sept.	...	161	...	151
Oct.	...	203	...	184
Nov.	...	176	...	158
Dec.	...	179	...	175
Avg	...	150	...	149

*Preliminary.
National Screw Machine Products Assn.

The downtrend in failures is continuing into February. Only once this year has the weekly figure moved ahead of the corresponding 1958 total, says D&B.

Industries Spot Trend

Most industry reports in the last few days give strong testimony to the strength of the industrial recovery.

Machine Tools—Net new orders for machine tools (both cutting and forming types) in January held above the $40 million mark, as predicted last week by STEEL (see Feb. 23, p. 69), proving that the rise during 1957's fourth quarter was no fluke. At the same time, producers cut back shipments from $43,950,000 in December to $31.8 million and raised their backlogs by nearly a half month's production at current rates.

Freight Cars—Orders for freight cars hit a 19-month high in January, totaling 4007 units, reports the American Railway Car Institute (see table above). With deliveries set at 1940 units, the industry's backlog advanced for the second consecutive month.

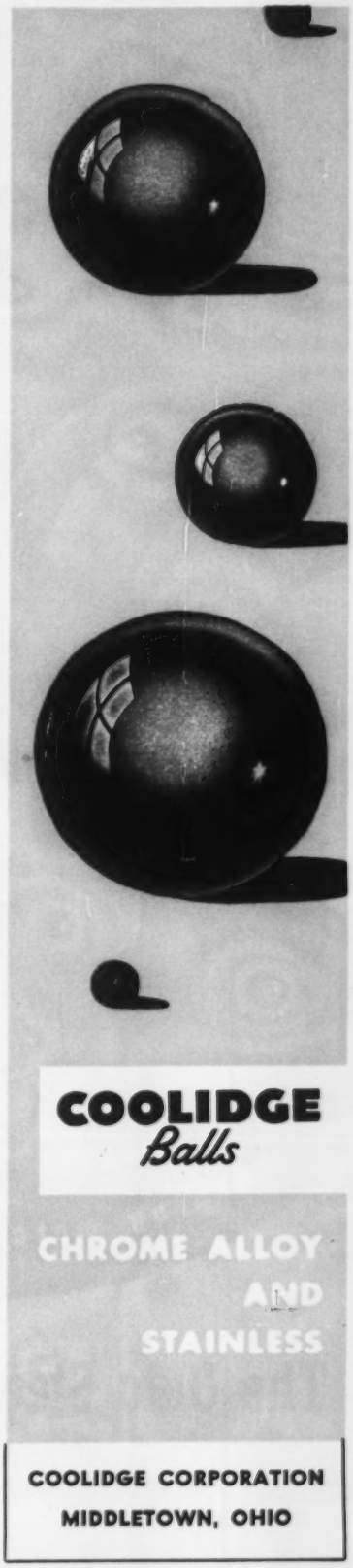
Foundry Equipment—This industry waited until the last month of the year to have its best new order period. December's index of 137 (1947-49=100) was the best since the 145.3 in October, 1957. (See table and graph above.)

Industrial Supplies—In a new index of business activity, the National Industrial Distributors' Association (wholesalers of industrial supplies and equipment) reports that sales in January were 3.2 per cent below December's but 4.2 per cent above the year-ago level.

Intercity Trucking—Another new indicator compiled by the American Trucking Association shows that intercity truck tonnage during the second week of February was 12 per cent greater than it was in the year-ago period.

Vacuum Cleaners — Manufacturers of standard size vacuum cleaners sold 242,516 units in January, reports the Vacuum Cleaner Manufacturers Association. The performance fell short of the pace in both December and January, 1958.

Compressor Bodies—Manufacturers of compressor bodies continued their recovery in November, which was 18 per cent better for shipments than the corresponding year-ago month, says the Air-Conditioning & Refrigeration Institute.



Ohio Rolls

OHIO
IRON AND STEEL
ROLLS

CARBON STEEL ROLLS
OHIOLOY ROLLS
OHIOLOY "K" ROLLS
FLINTUFF ROLLS
DOUBLE-POUR ROLLS
CHILLED IRON ROLLS
DENSO IRON ROLLS
NICKEL GRAIN ROLLS
SPECIAL IRON ROLLS
NIOLOY ROLLS
FORGED STEEL ROLLS

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The Ohio Steel Foundry Co.

Lima, Ohio

Plants at
Lima and Springfield, Ohio

LIMA... Virtually at the center of the steel industry

JOHN C. HELIES
Security Eng. Div. gen. mgr.

ROBERT U. CLEMENCE
Hyde Mfg. president

LAWRENCE M. ROBERTS
Research-Cottrell senior v. p.

JAMES L. DANIELL
Green River Steel pres.

John C. Helies was made general manager, **Security Engineering Div.**, Dallas, Dresser Industries Inc. Executive vice president of the division, he assumes added responsibilities of general management following resignation of **C. L. Lane**, president and general manager.

Robert U. Clemence was named president of **Hyde Mfg. Co.**, Southbridge, Mass. Former vice president, he succeeds **Arthur J. LaCroix**, now chairman. **F. A. Skinner** was elected treasurer-comptroller; **H. G. Barth**, vice president-sales; **Alan C. Ferguson**, vice president-manufacturing; **Russell A. Burton**, director of marketing.

Frederick O. Bischoff was made production manager; **Gerald Newberg**, project engineer for **Potter Instrument Co. Inc.**, Plainview, N. Y.

August J. Breitenstein was made assistant vice president-raw materials, **United States Steel Corp.**, Pittsburgh. He was director-exploration and planning.

Avard W. Taylor was made general sales manager, Mill Product Div., **Carpenter Steel Co.**, Reading, Pa.

Jacob J. Jaeger was named executive vice president, **Pratt & Whitney Co. Inc.**, West Hartford, Conn. He was vice president-engineering. **Edward J. Shages**, former vice president and manager, Cutting Tool & Gage Div., was made vice president of manufacturing for all operations. **Henry J. Fredericks**, treasurer-controller, was named a vice president.

Lawrence M. Roberts was elected senior vice president, **Research-Cottrell Inc.**, Bound Brook, N. J. **William H. Blessing** was named New York district sales manager; **Richard H. Betchley**, San Francisco sales manager; **Robert L. Sferra**, sales engineer, San Francisco district. In addition to his new duties, Mr. Roberts continues in charge of engineering and research, duties he has carried out as a vice president since 1954.

Malcolm J. Lang was made sales manager, Cleveland branch, **National Lead Co.**

R. A. Obringer and **J. D. Glenn II** were named to new posts in the sales department of **Crucible Steel Co. of America.** Mr. Obringer becomes staff assistant to the assistant general sales manager-product divisions; Mr. Glenn is staff assistant-titanium and vacuum metals sales division. Both are at Pittsburgh.

James L. Daniell was elected president, **Green River Steel Corp.**, Owensboro, Ky. He was executive assistant to Frank B. Rackley (Green River chairman) in the latter's capacity as president of Jessop Steel Co., Washington, Pa., parent company. Mr. Daniell was assigned in December to co-ordinate production and sales of Green River.

Michael J. Myers was named vice president-sales, **Hynes Steel Products Co.**, Youngstown.

John H. Pimm, sales manager of building and contract parts for **Bridgeport Brass Co.**, Bridgeport, Conn., was named to manage a new plant soon to be constructed in Moultrie, Ga., to make tubular plumbing goods. **Douglas C. Graham**, former sales manager, Condenser Tube Div., was made assistant sales manager-brass mill products, replacing **Renald W. Frederick**, recently named assistant to

JACOB J. JAEGER

EDWARD J. SHAGES

HENRY J. FREDERICKS

executive posts at Pratt & Whitney Co.

JOHN W. THEES

CHARLES I. HODGSON

Doehler-Jarvis operations posts

CARL W. SHATTUCK

FRANK HAMILTON JR.

McKiernan-Terry president, vice president

the president. **Philip E. Bush** succeeds Mr. Graham.

Doehler-Jarvis Div., National Lead Co., Toledo, Ohio, named **John W. Thees** production manager. **Charles I. Hodgson** was made manager of Plant 1, Toledo, succeeding Mr. Thees. **Richard M. Hindman** succeeds Mr. Hodgson as sales manager of the division's two Toledo plants.

National Malleable & Steel Castings Co. appointed **William M. Ewing** vice president-general manager, Capitol Foundry Div., Phoenix, Ariz. He succeeds **Edward A. Spring**, founder of Capitol Foundry Co., and general manager of the division since acquisition in 1952. Mr. Spring continues to act as a consultant and on special assignments. **Lawrence G. Blackmon**, general superintendent, Sharon, Pa., Works, succeeds Mr. Ewing as works general manager. **Kenneth L. Selby**, vice president - engineering, Transportation Products Div., Cleveland, was made vice president-general manager.

Carl W. Shattuck was elected president, **McKiernan-Terry Corp.**, Harrison, N. J. He was first vice president, and previously was in charge of the Dover, N. J., plant. **John C. Smaltz** resigned as president to devote his time to the engineering and research work of the corporation as its consulting engineer. **Frank Hamilton Jr.** was elected vice president, and assumes Mr. Shattuck's post as general manager, Dover Works. **Herbert G. Dillon** was elected first vice president, and remains in charge of the Mead-Morrison Div. at Harrison.

H. Richard Ford was named sales manager, Kokomo, Ind., Div., **Kingston Products Corp. George Kelly** was appointed to the Detroit sales office, representing the Douglas Mfg. Div.

Raymond M. Waggoner takes over the post he formerly occupied as vice president in charge of west coast operations for **Hubbard & Co.** During the last two years, he played a major role in effecting consolidation of the Pittsburgh and Chicago pole line hardware plants, building and staffing of the electrical research laboratory, and the moving of executive offices to Chicago.

Ralph A. Smith was appointed chief materials and test engineer for **Fulton Sylphon Div.**, Knoxville, Tenn., Robertshaw-Fulton Controls Co. He was chief metallurgist and chief project engineer, materials section.

Philip D. Moore was made manager of **General Electric Co.'s** union relations service, New York. He is responsible for basic research, planning, and counsel on relations with labor unions representing GE employees, and for negotiating national level labor contracts.

Robert M. Snyder was made general manager, **Dis-Die Steel Inc.**, Warren, Mich.

John H. Mullaney was named manager, Purchasing Div., **Louis Allis Co.**, Milwaukee. He succeeds **Hans M. Larsen**, who will be a consultant until retirement at the end of the year.

Wyman-Gordon Co., Harvey, Ill., named **Charles M. Demster** purchasing agent to succeed **John H. Roe**, retired.

Arthur B. Williams, sales manager, **Engineered Electronics Co.**, Santa Ana, Calif., was elected a vice president of the firm, a subsidiary of Electronic Engineering Co. of California.

C. L. Fiegel was named eastern sales manager, **Acme Electric Corp.**, Cuba, N. Y. **Ken Burton** was named western sales manager, with head-

WILLIAM M. EWING

LAWRENCE G. BLACKMON

KENNETH L. SELBY

National Malleable & Steel Castings operating executives

Both parts need CONDUCTIVITY...

But this **BOLT** needs high strength, too

High yield strength and conductivity were best met by Silnic Bronze.

And this **IGNITION PART** calls for good machinability

Combination of machinability with ductility and conductivity called for Chase Tellurium Copper

Unique Chase Service helps you find the one wire that's right

FOLLOW-THROUGH right to the production line, working with foreman and workers, is one reason the Chase Wire Service Man can help you find the best answer to cold-heading problems. Call on him today!

Before you order wire again, get in touch with Chase. See for yourself how the unique Chase Wire Service Plan can help you. Here's how it works: you tell us what you do with wire—what properties you have to get—describe any problems you may be having. You send us parts, drawings of your products. A Chase Wire Service Man can help you find the one wire that's right for your needs among all those that Chase makes—or if Chase doesn't already make it, we'll *product-engineer* wire for your particular individual needs.

You can only get service like this from Chase—so turn your wire fabricating problems over to the man who knows wire best. That's the Chase Wire Service Man. You can reach him by calling your nearest Chase warehouse or district office, or by writing Chase Brass & Copper Co. at Waterbury 20, Connecticut.

PRODUCT-ENGINEERED WIRE

Chase

BRASS & COPPER CO.

WATERBURY 20, CONN.

Subsidiary of ***Kennecott Copper Corporation***

THE NATION'S HEADQUARTERS FOR **ALUMINUM • BRASS • BRONZE • COPPER • STAINLESS STEEL**

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L.I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

WAYNE M. BIKLEN
A-S-R operations manager

WILLIAM V. SHAKESPEARE
Cincinnati Rubber v. p.

RALPH A. PURCELLI
Rockwell Mfg. plant mgr.

KURTZ M. HANSON
Lanston Industries president

HAROLD A. JOHNSON
Barnes Drill v. p. eng.-mfg.

WILLIAM V. LUNEBURG
Mather Spring v. p.

quarters at the new Hawthorne, Calif., plant.

Kurtz M. Hanson was elected president of **Lanston Industries Inc.**, Philadelphia. He was president, Champion-International Co.

Harold A. Johnson was elected vice president-engineering and manufacturing, **Barnes Drill Co.**, Rockford, Ill. **H. L. Cogswell** was elected vice president-sales and service for the machine tool, coolant cleaning equipment, and honing divisions. **Roger Marriott,** executive vice president, was elected secretary and treasurer to succeed **A. G. Block,** retired.

W. Bradley Gilkey was promoted to central region sales manager, Detroit, for **Sparton Corp.'s** Tri-Belt device car, manufactured and sold by its Allied Steel & Conveyors Div.

John H. McNerney was elected chairman of the board, chairman of the executive committee, and chief executive officer of **Seneca Wire & Mfg. Co.**, Fostoria, Ohio.

William V. Luneburg was elected a vice president, **Mather Spring Co.**, Toledo, Ohio. He was manager of the Dearborn, Mich., assembly plant of Ford Motor Co., and associated with Ford for the last ten years.

Sidney Siegel, for the last three years manager of engineering at M & C Nuclear Inc., resigned to become executive vice president and part owner of **U. N. Alloy Steel Corp.**, Boston, exclusive agent in the U. S. for sales of high speed steel made by Bohler Bros. & Co. Ltd. of Austria.

John O. Ekblom was elected chairman of **Hupp Corp.**, Cleveland. He was chairman of the executive committee.

Langdon C. Schaefer joined **Century Electric Co.**, St. Louis, as manager of engineering. He was engineering manager of Westinghouse Electric Corp.'s Small Motor Div. in Lima, Ohio. **H. George Nafe** was made manager, headquarters sales staff.

Wayne M. Biklen was made manager of operations at the Staunton, Va., razor and blade plant of **A-S-R Products Corp.** He is in charge of manufacturing, engineering, quality control, and materials functions.

William V. Shakespeare, assistant to the president, was elected a vice president of **Cincinnati Rubber Mfg. Co.**, Cincinnati, a division of Thor Power Tool Co.

Ralph A. Purcelli, executive assistant to the general manager of **Rockwell Mfg. Co.'s** Barberton, Ohio, plant, was named general manager of the company's Porterville, Calif., plant. He replaces **Charles N. Perry,** resigned.

Frank Jaworski was made eastern district sales manager, **Engineered Precision Casting Co.**, Matawan, N. J. He was with Eclipse Pioneer Div., Bendix Aviation Corp., serving as chief buyer and head of the Tool Procurement Dept.

George Whitney was made assistant purchasing agent, **Wisconsin Motor Corp.**, Milwaukee.

Perry W. House was made manufacturing manager of the Anderson, Ind., plants of **Delco-Remy Div.**, General Motors Corp. He is succeeded as assistant chief engineer by **John D. Baker. Forrest A. Stinson** was made assistant general sales manager for original equipment; **R. C. Robertson,** chief production engineer. **John R. Mail** was made Detroit regional sales manager.

Robert J. Russell was appointed executive vice president, **Hardinge Co. Inc.**, York, Pa.

At **Chrysler Corp.'s** Stamping Div., Detroit, **Charles C. Mezey** fills the new post of general plants manager, with responsibility for six plants in Michigan and Ohio. **A. James Savage** was named manager of the Nine-Mile press plant.

OBITUARIES...

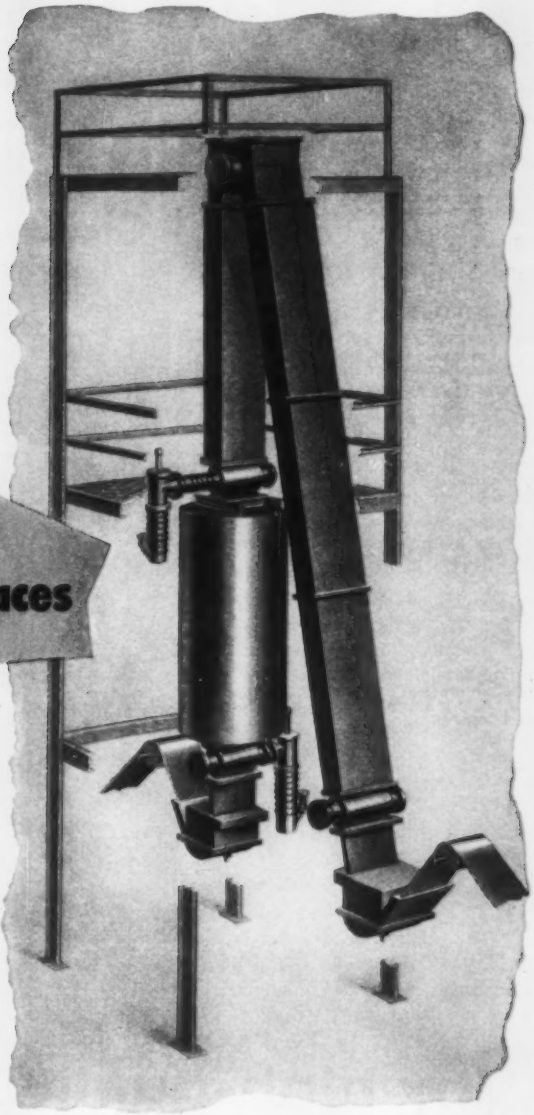
Merrill K. Good, 47, manager of electrode sales, **Hobart Bros. Co.**, Troy, Ohio, died Jan. 25.

Henry F. Vogt, 79, former chairman, **Cutler-Hammer Inc.**, Milwaukee, died Feb. 16.

Another

EF *"first"*

Fuel-fired or electrically heated Continuous Vacuum Furnaces



for bright heat treating of

Beryllium, Hafnium, Tantalum, Titanium, Zirconium, High Carbon Steels, 200—300—400 and Precipitation Hardening Stainless Steels

and other strip

Again Electric Furnace Co. research scores an important break-through in heat processing. Now, fully developed and ready for commercial service, these new EF continuous vacuum furnaces offer many advantages. This continuous vacuum treatment:—

1) Is chemically neutral to all metallic alloys. It avoids the possibility of gas pick-up by the material being treated, thus assuring no carburizing, no nitriding and no de-carburizing.

2) Improves the physical properties by "outgassing" the material.

3) Eliminates any hazard of explosion.

4) Drastically reduces the operating costs by eliminating the need for special atmosphere equipment.

Temperatures to 2100° F., higher if necessary. Strip can vary from .0005" to any coilable thickness, in any desired width. Furnished complete with vacuum pumps, automatic controls and terminal equipment if desired.

We will welcome an opportunity to discuss with you the advantages of this new, continuous vacuum process, and to quote on the equipment that will best meet your particular requirement.

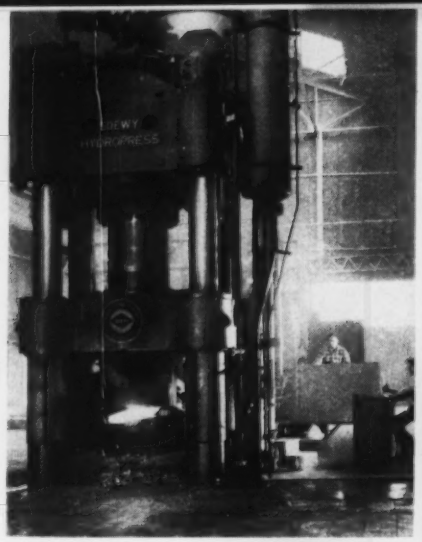
EF

THE ELECTRIC FURNACE CO.

Gas-fired, Oil-fired and Electric Furnaces for Heat Treating any Product, Using any Process, any Hourly Output.

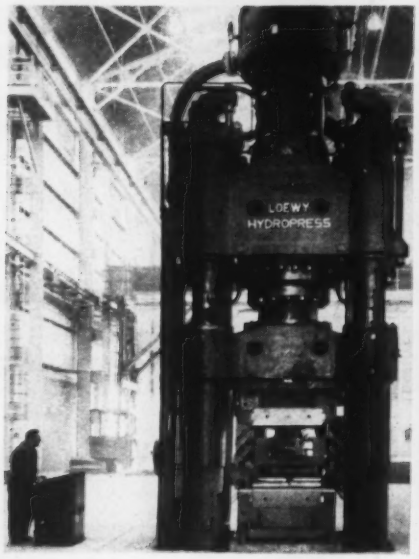
500 West Wilson Street *Salem - Ohio*

Branch Offices in Detroit, Mich., Santa Ana, Calif., and Chesire, Conn. Canadian Associates, Canefco Limited, Toronto 13, Ontario

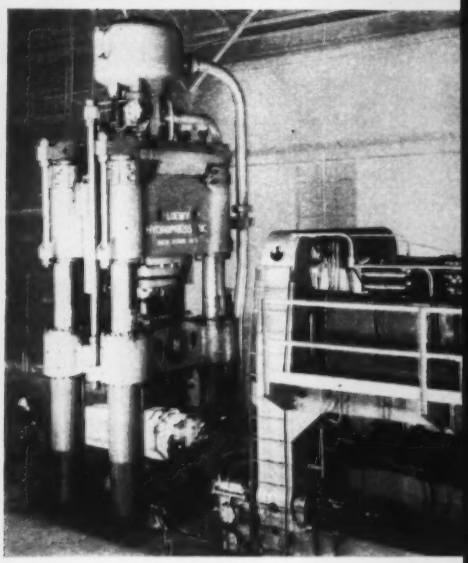


2000-ton press at Colonial Steel Division of Vanadium-Alloys Steel Co., Monaca, Pa. (left)

1500-ton press at leading alloy steel manufacturer in southern Pennsylvania.



2000-ton press at Simonds Saw & Steel Co., Lockport, N.Y. (left)



2000-ton press in operation at the Titusville, Pa., plant of Universal-Cyclops Steel Corp.

Why high-quality alloy steel makers are using Loewy fast-forging presses

The rapid advances in modern technology—especially in nucleonics, aviation and rocketry—call for production of the best in steels, free of segregation, clean and homogeneous, flawless and uniform in structure. Tests on high-quality steels produced on Loewy-Hydropress forging presses have yielded excellent results. America's leading mills find that Loewy forging presses enable them to meet the most exacting requirements of customers using steels for service conditions involving excessively high temperatures, stresses and corrosion.

Spontaneous statements by steel makers praise Loewy's "workmanship and fine talent," the trouble-free operation of Loewy forging presses, and the fact that these machines impart to special steels "internal qualities never before achieved." Again and again clients laud Loewy's continued and very real interest in their processes and operation, an interest which never ends with the installation of a press.

Loewy forging presses are designed for faster displacement of metal, fewer reheats, and minimum downtime. They outproduce hammers by a wide margin. Driven by air-loaded accumulators and equipped with oil-hydraulic servo controls, they assure smooth, safe, unfailing performance.

For particulars on how Loewy fast-forging presses can solve your production problems, write us at Dept. B-3.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering

BALDWIN BLH LIMA-HAMILTON

Howe & Fant Sold

Brown & Sharpe acquires maker of turret drilling and jigless positioning devices

BROWN & SHARPE Mfg. Co., Providence, R. I., 125 year old machine tool builder, has purchased Howe & Fant Inc., East Norwalk, Conn., originator and manufacturer of turret drilling and jigless work positioning devices. Acquisition was by stock purchase.

Howe & Fant will become a subsidiary known as Brown & Sharpe Turret Drilling Div. Inc. The East Norwalk plant will be retained with its present personnel.

Product distribution will continue through Howe & Fant's dealers in U. S. metalworking centers.

Brown & Sharpe makes a broad range of milling, grinding, and single spindle screw machines; precision cutting, and inspection tools; machine tool accessories; and hydraulic products.

Arnold Charlat is president of the new subsidiary, succeeding A. S. Howe Jr., who will continue as director.

Steelcraft Enlarges Plant

Steelcraft Mfg. Co., Cincinnati, is enlarging its plant for the production of hollow metal steel doors and frames. A plant addition will contain 50,000 sq ft of floor space. The company has sold its Metal Buildings Div. to Inland Steel Products Co., Milwaukee.

Mesta Gets Inland Award

Mesta Machine Co., Pittsburgh, has been awarded a contract for the manufacture of a 54 in. twin stand, temper pass mill and auxiliary equipment for the Indiana Harbor (Ind.) Works of Inland Steel Co., Chicago.

Designed to skin pass strip up to 48 in. wide at a maximum speed of 7000 fpm, the equipment will include: Two 54 in. temper mill stands with entry and delivery tension devices, cobble knife, and automatic roll polishers; feed reel with double overhung mandrels and elevating coil cradle; tension reel of the automatic shifting type to provide straight sided coils, with elevating stripper and belt wrapper; oil and grease lubricating systems; and exhaust system.

Mesta will supply auxiliary coil handling equipment, a crop shear, and a coil lowering unit to place the coil on the entry coil conveyor. For the delivery side of the mill, Mesta will provide a delivery conveyor (about 58 ft long), capable of handling seven finished coils, and incorporating a mechanical coil weighing device.

Buys Control of Foundry

Eugene Huebner and associates have purchased a 75 per cent stock interest in the nonferrous Aelco Foundries Inc., Milwaukee. Mr. Huebner has been elected president.

Rolls Ultrathin Strip

American Silver Co., Flushing, N. Y., established a new division to supply almost minuscule quantities of ultrathin and extremely close tolerance metals to laboratories. The metals processed include cadmium, titanium, heat-hardenable stainless steels, and zirconium. A recent achievement was the production of a gold alloy strip only 80 millionths of an inch thick.

Will Build Uranium Mill

Federal Uranium Corp. will construct a uranium processing mill in the Gas Hills area of Wyoming, subject to approval by the Atomic Energy Commission of a concentrate purchase agreement. The mill will be designed and constructed by Western-Knapp Engineering Co., San Francisco. The project, including work to be done by Federal, will cost more than $3 million. The mill will process 522 tons of uranium ore a day.

Ward LaFrance Forms Units

Ward LaFrance Truck Corp. Inc., Elmira, N. Y., has created six new divisions: Fire Apparatus, Motor Truck, Utility Equipment, Government Sales, Custom Body, and Cargo Container. Officers include: John R. Stone, vice president-operations; J. E. Faehndrich, treasurer; Laurence Witten, vice president-advertising and sales promotion; John A. White, vice president-government relations; P. A. Jenks, general sales manager; R. S. Krause, production manager; G. W. Barr, chief engineer; and J. V. Valego, purchasing agent.

Auto Groups Merge

The Automotive Service Industry Association has been formed by the merger of the National Standard Parts Association and the Motor & Equipment Wholesalers Association. The new group includes over 4000 wholesalers and 375 manufacturers.

A 10 per cent gain is forecast for the automotive jobbing industry by Victor L. Toft, NSPA junior vice president. Reasons: An estimated $16 billion boost in consumer spending this year, a rise in reconditioning three to nine year old cars, and a travel boom predicted to bring the biggest car travel year in history.

A 15 to 20 per cent increase is seen in overseas replacement part sales for 1959 by J. T. Wolfson, head of Maremont International Corp., Chicago. His forecast is based on greater stability in Latin America.

Low sales of new cars in 1958 benefited the automotive wholesaler, accounting for a 6 per cent sales gain over 1957 and a 12 per cent boost over 1956.

King Graphite Opens Plant

King Graphite Products Inc., producer of graphite lubricating products, has started operations at 21949 S. Telegraph Rd., Trenton, Mich. John L. King is president of the new corporation.

Plans Pilot H-Iron Plant

Bethlehem Pacific Coast Steel Corp. plans to build a pilot H-iron plant in Los Angeles. Crude metallic iron will be produced through a direct reduction process which utilizes hydrogen at relatively low temperatures and high pressures to remove oxygen from iron ore. Engineered by Hydrocarbon Research Inc., the plant will consist of these main components: Drying and

(*Please turn to Page* 104)

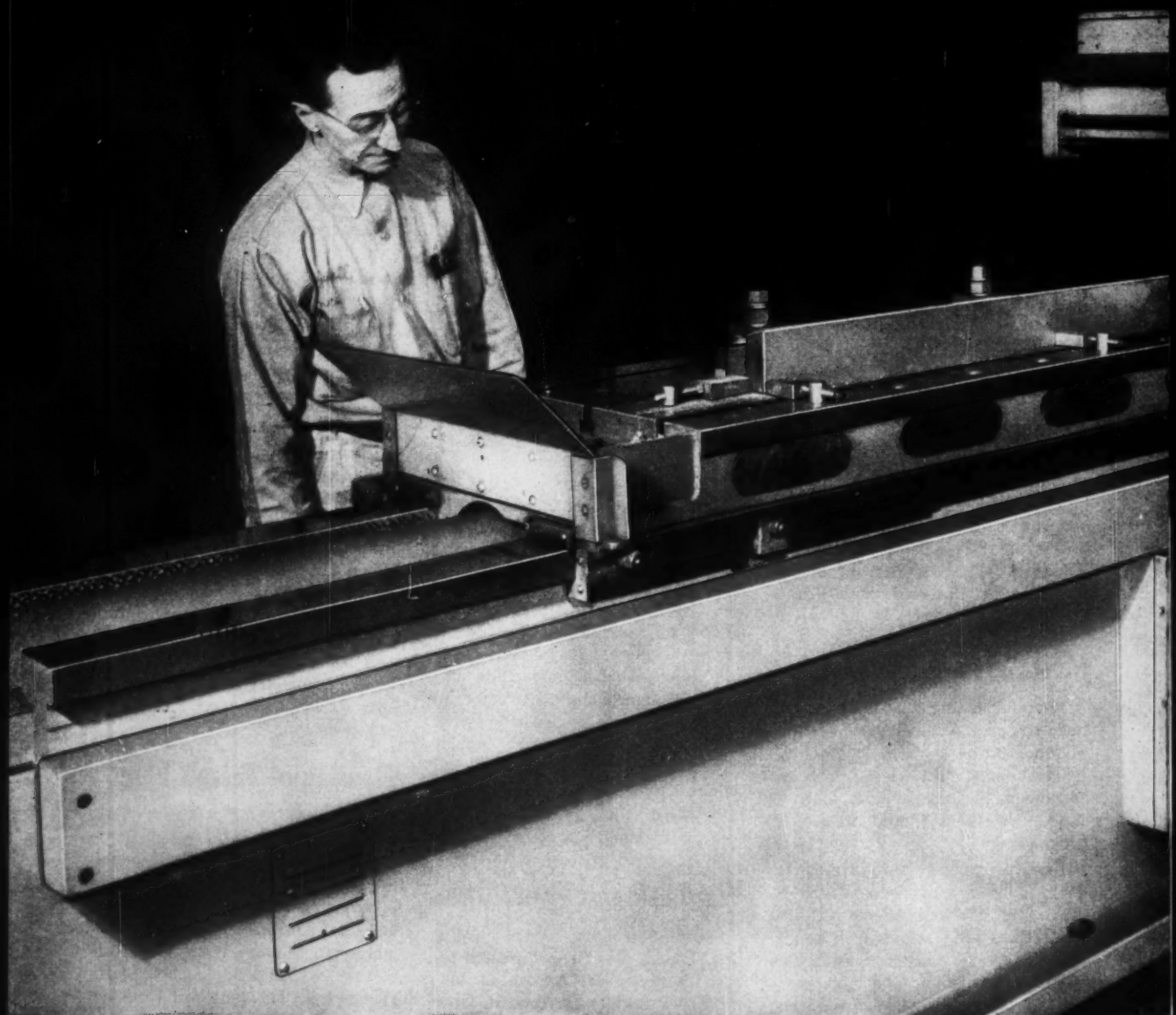
Ball & Jewell, Inc.

INCREASE PRODUCTION, CUT COSTS!

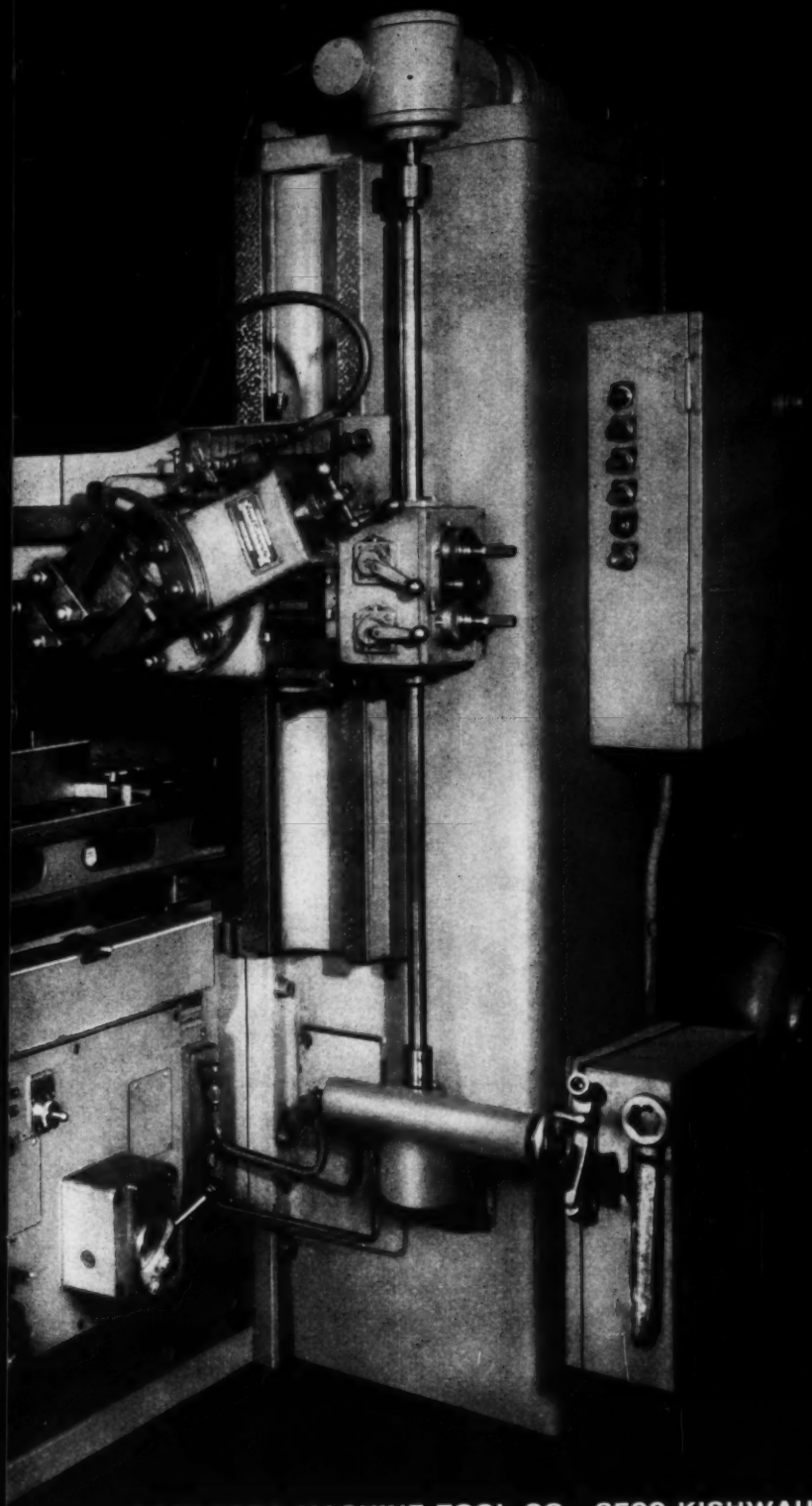
using Rockford Hy-Draulic

OPENSIDE SHAPERS

Eliminate Costly Fixtures and Multiple Operations by Shaping Cutter Blades Quickly In Continuous Bar-Form.



HY-DR

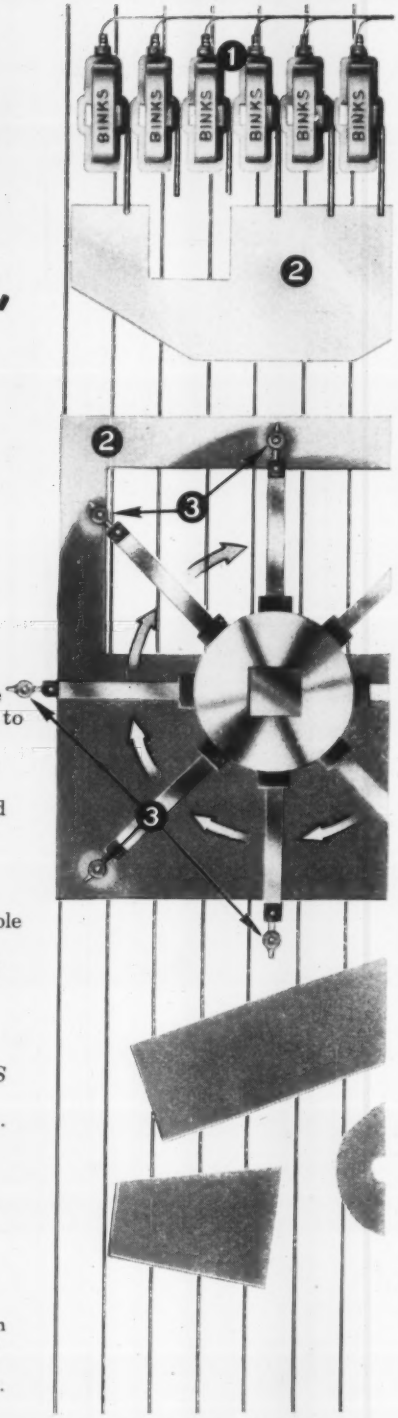


HYDRAULIC

ROCKFORD MACHINE TOOL CO. 2500 KISHWAUKEE STREET ROCKFORD, ILLINOIS

AULIC

Now you can automatically SPRAY non-repetitive, odd shapes without wasting material...



Binks MEMORY TIMERS automatically sense product shape, size and location on the conveyor and relay these data to your automatic spray guns. Spray guns operate only when each product is in precise position. No material is wasted spraying cutout areas or odd shapes. Coverage uniformity is improved.

These electro-mechanical timers are rugged and dependable . . . adaptable to most rotary, horizontal or vertical spraying machines.

Here is how the system looks from above

① *Binks MEMORY TIMERS astride your conveyor sense size, outline and location of...*
② *irregularly-shaped products to be sprayed and relay this information to . . .*
③ *your automatically operated spray guns.*

Send for Bulletin A96-1 See how this new timer completely automates your finishing operation without involving you in complex equipment. Call your nearest Binks Branch Office or write direct.

9086

Binks
EVERYTHING FOR SPRAY PAINTING

SPRAY GUNS

AIR COMPRESSORS

NATIONWIDE SERVICE

Binks Manufacturing Company
3122-30 Carroll Ave. West, Chicago 12, Ill.

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

(*Concluded from Page 101*)

grinding equipment for processing iron ore, reactors in which the iron ore is reduced by the hydrogen passing through it, a unit to manufacture the hydrogen, and machinery to convert the crude metallic iron into briquettes to be used as melting stock for electric furnaces.

Clevite Broadens Service

Clevite Corp., Cleveland, is offering design and production service for specialized titanium and zirconium components. Facilities operated by the Metallurgical Products Dept., Mechanical Research Div., are built around the proprietary high density, high purity powder metallurgy processes. Components ranging from tiny cams and fasteners to valve body parts and complex structural units can be fabricated.

Boosts Honeycomb Output

Solar Aircraft Co., San Diego, Calif., will install a huge furnace for the brazing of large panels of all-metal honeycomb sandwich. The facility is in addition to the furnace being constructed for brazing and heat treating. Other projects include development of a unique traveling furnace technique, investigation of a low cost radiant gas heat method for brazing, and addition of advanced coremaking machines. Solar will quadruple within a year the areas allotted to honeycomb production.

Sturdi-Bilt Changes Name

Sturdi-Bilt Steel Products Inc., Chicago, changed its name to Sturilite Products Inc. Irwin Shayne, vice president, will direct all sales, advertising, and merchandising activities; Lewis G. Eisold is sales manager, Industrial Div.; S. W. Bows, sales manager, Consumer Products Div.; and Paul C. Curtis, manager, Monmouth, Ill., plant.

Milwaukee Firm Organized

Kramer-Nicholas Industries Inc., has been organized through the acquisition of the plant and manufacturing facilities of King Machine Co. and the reorganization of

Bridgeport Ultra Fine Grain Brass Strip Saves Siesta-Ware $2,400 a Year

Colorful Siesta-Ware is designed to create a holiday mood ... and so are the remarkable production savings realized by Benner Glass Company!

Before Benner Glass Company, Jacksonville, Fla., made the happy discovery of Bridgeport Ultra Fine Grain Brass Strip, production of the brass banding on each attractive Siesta-Ware Party Mug, Snack Jar and Tumbler was at the rate of two coils of strip running at 35 lineal fpm through three buffing stages. Today, with Bridgeport UFG Strip, the same machine runs *at the rate of 48 fpm!*

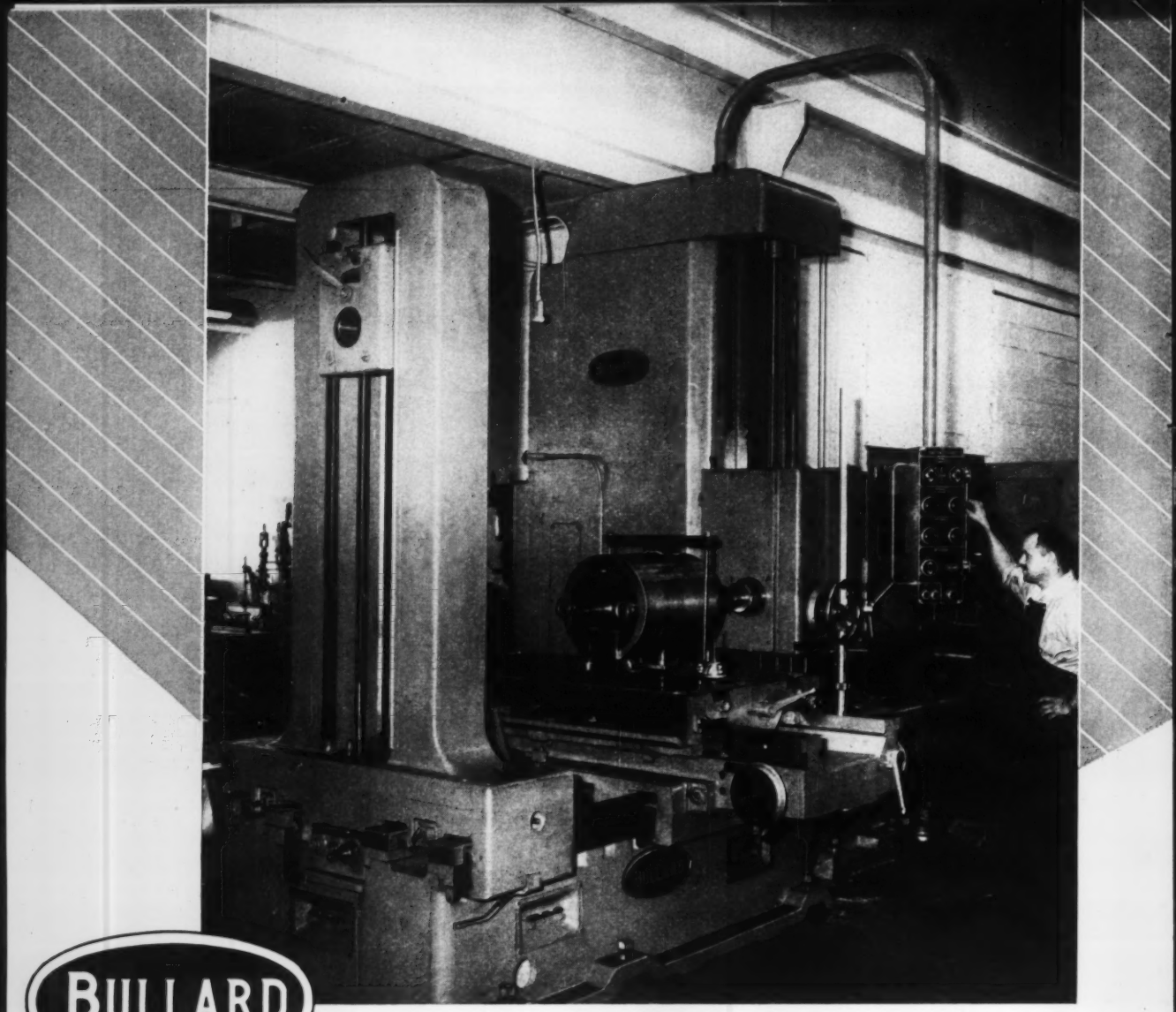
There's a simple reason why Benner Glass now realizes 23% time savings and 8% savings on polishing materials. It is this: the infinitely superior finish of Bridgeport Ultra Fine Grain Strip requires far less buffing. Important savings in time, cutting compound and buffing naturally result. In the annual processing of Bridgeport coiled strip, Benner saves more than $2,400 ... while turning out an even better finished product!

Don't *you* overlook the sizable savings that can be yours when you switch to Bridgeport Ultra Fine Grain Brass Strip. To get the facts and figures as they apply to your products, call *your* nearby Bridgeport Sales Office ... or write direct for a copy of our Ultra Fine Grain Brass Booklet, GRAIN SIZE, THE FOURTH DIMENSION. Dept. **3903.**

BRIDGEPORT BRASS COMPANY

BRIDGEPORT 2, CONNECTICUT

Specialists in Metals from **A***luminum to* **Z***irconium*



BULLARD

"It's Really **RUGGED** and Versatile"

"In our business," says Mr. Stanley McDonald,
Plant Foreman of E & M Enterprises, Inc. of Middleport, New York,
"building special machinery for a wide segment of industry, we needed
a horizontal boring machine that was rugged, accurate, faster,
easy to set up and control. We decided that the Bullard H.B.M., Model 75
best met our requirements. Now, after more than two years of operation,
we're convinced we made the *right* choice and bought the *right* machine."

A call to the nearest Bullard Sales Office or Distributor will convince you that the Bullard H.B.M., Model 75 is the right choice for you.

THE BULLARD COMPANY
BRIDGEPORT 9, CONNECTICUT

Kramer Co., both of Milwaukee. Headquarters of the new firm are at 4530 W. Burnham St., Milwaukee, Wis. Officers include: President, Sam Kramer; secretary-treasurer, James Nicholas. The company does general machining, tool and die work, and sells steel.

CONSOLIDATIONS

Clevite Corp., Cleveland, is acquiring **Walco Products Inc.**, East Orange, N. J., and its associated companies, Electrovox Co. Inc., East Orange, and Precision Products Inc., Puerto Rico. If negotiations are completed, the companies will become part of Clevite's Electronic Components Div.

Foote Bros. Gear & Machine Corp., Chicago, will purchase **Whitney Chain Co.**, Hartford, Conn., subject to approval by Foote stockholders. Whitney makes roller and other types of chain and sprockets and devices used in industrial power transmission.

American Metal Products Co., Detroit, purchased **Davis Engineering Corp.**, Elizabeth, N. J., maker of such products as heat exchangers, evaporators, distillation equipment, and lubricating oil coolers. A. O. Jaeckel will continue as general manager of the engineering firm. American Metal produces automotive components, porcelain on steel bathtubs, steel wall panels, hospital beds, metal storage equipment, and precision metal tubing.

Products Div., Globe Co., Chicago, acquired **Hilmar Co. Inc.**, Detroit, manufacturer of expanded metal partitions and panels.

Metal Glass Products Co., Elkhart, Ind., has become a subsidiary of **Barler Metal Products Inc.**, Goshen, Ind. Officers are: President, M. E. Miller; vice presidents, G. H. Dovenmuehle Jr. and R. W. Kintigh; and secretary-treasurer, F. A. Kummeth.

Aluminum & Chemical Corp., Greenwich, Conn., purchased Per-

(*Please turn to Page* 110)

RAY RIVERS, 33 years of service, LENOX chief test man

LENOX *HIGH SPEED STEEL*

band saw blades

Cut faster . . . take greater feeds . . . last longer than conventional sawing methods, the new *LENOX High Speed Steel* Band Saw Blades assure greater production rates. Recommended specifically for special high speed steel band saw machines, these new Lenox blades have performed successfully on some regular and all machines. Available in standard and hook tooth design.

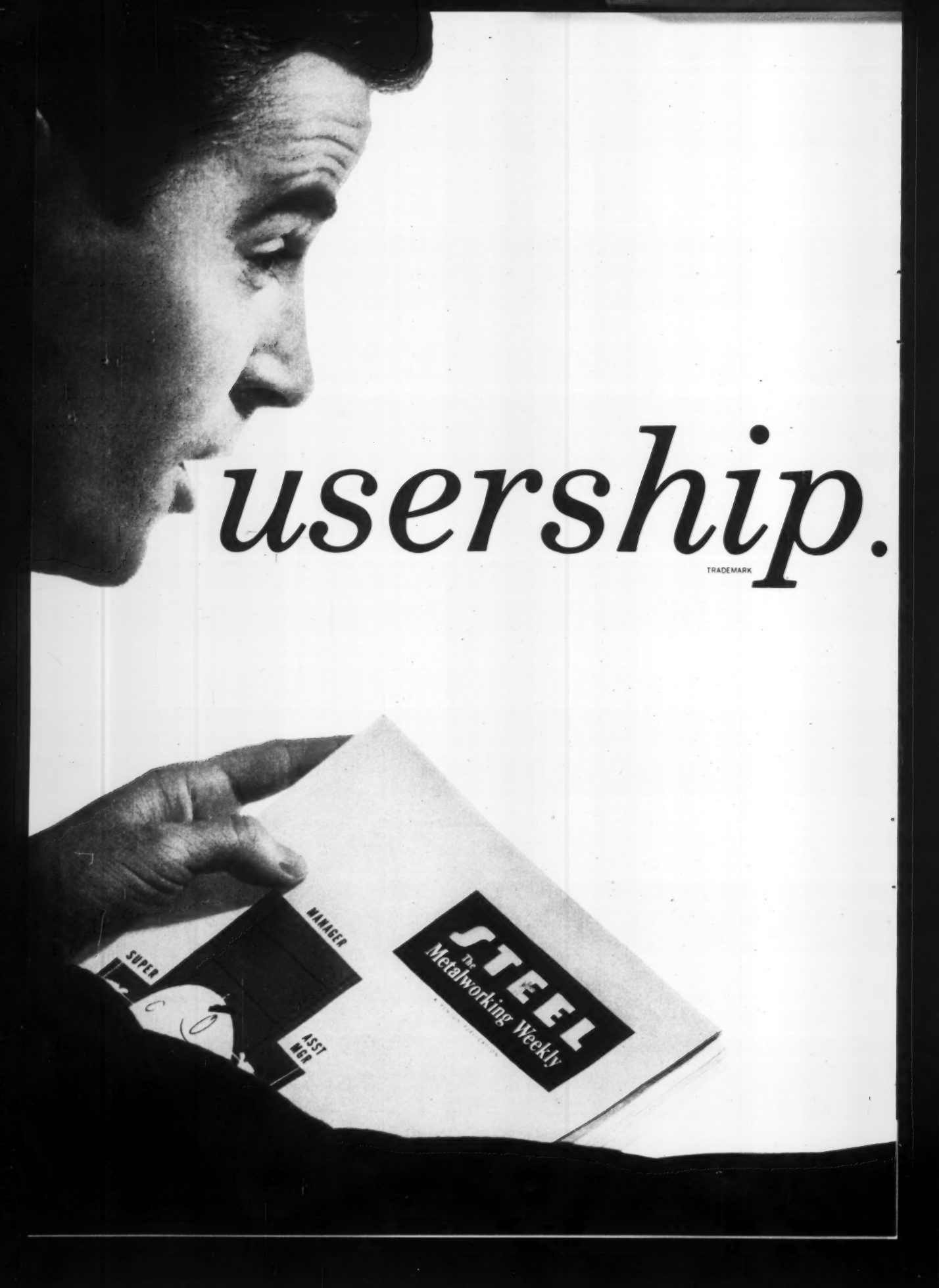
PROVEN!

FREE! NEW HELPFUL HANDBOOK ON HIGH SPEED STEEL BAND CUTTING

New and comprehensive product data sheet offers the complete story of Lenox High Speed Steel Band Saw Blades with helpful suggestions on cutting. Write today for Data Sheet No. 1202.
For help with your specific cutting requirements, a high speed steel band saw specialist direct from factory is ready to serve you. Please write or call for immediate attention.

LENOX
THE TOOLS OF THE HAND BOX

AMERICAN SAW & MFG. COMPANY
SPRINGFIELD, MASSACHUSETTS • U.S.A.


usership.
TRADEMARK
MANAGER
SUPER
ASST MGR
STEEL
The Metalworking Weekly

. . *is readership-in-action*

Usership is the step beyond readership. It sums up the dynamic power to move readers to action that is the life-force of an exciting and influential magazine.

STEEL is metalworking's *Usership* magazine. It serves the needs of metalworking's action-minded leaders as no other magazine does. And because STEEL serves these men so well, they *use* STEEL—base direct business action on what they read.

STEEL's report on "value analysis", for example, touched off a series of management meetings and discussions throughout metalworking.

Usership is also the measure of a magazine's ability to get action for advertisers. That is why today more advertisers are placing more advertising in STEEL than any other metalworking magazine.

usership is the strength of STEEL

OSBORN® announces:

a new concept in power brushing tools

How **TY® BRUSHES** will significantly cut your finishing costs

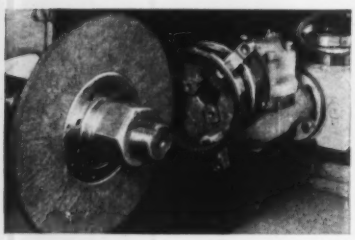
Designed for jobs *beyond the reach* of standard wire power brushes, Osborn TY® Tool Brushes are literally a new concept in finishing tools.

Where rotary files, abrasive stones or belts, tumbling and shot blasting equipment have been used—TY Brushing Methods now do many of these jobs *better . . . at significantly less cost.*

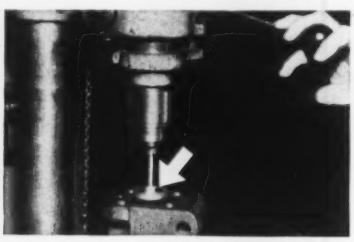
These exclusive TY Brush advantages have been proved through extensive field tests—

- *Maximum of work efficiency with minimum of pressure*
- *Greatly increased brushing action strength*
- *Positive control over area of brush contact*
- *Complete uniformity of finish*
- *Exceptionally long brushing tool life*

Osborn TY Brushes will give you a higher rate of output . . . better product quality . . . lower end-of-service cost. Write or call us today for full information. No obligation, of course. *The Osborn Manufacturing Company, Dept. S-4, Cleveland 14, Ohio.*



Blending Gear Tooth Edges *and deburring in a single precision operation is done with Osborn TY Monitor® Brush running at 1750 rpm on Brushamatic® 3A Machine.*



Cleaning and Finishing *internal surfaces of machined castings is done with an Osborn TY Ringlock® Brush mounted on a simple drill press setup. Operation is rapid, thorough—low cost.*

Osborn Brushes

BRUSHING MACHINES
BRUSHING METHODS
POWER, PAINT AND MAINTENANCE BRUSHES
FOUNDRY PRODUCTION MACHINERY

(*Concluded from Page* 107)

fection Metals Products Inc., Birmingham, and will operate the property as a division. Clyde Winter will continue as president of Perfection Metals; Byron K. Sirois, vice president.

Saco-Lowell Shops, Boston, purchased **Servo Dynamics Corp.**, Somersworth, N. H., and will operate it as a wholly owned subsidiary under the direction of A. R. Abbott.

Hughes Aircraft Co., Los Angeles, purchased **Vacuum Tube Products Co. Inc.**, Oceanside, Calif., maker of vacuum tubes, precision electronic welding equipment, diodes, gages, controls, and timers.

McAleenan Bros. Co., Pittsburgh, formerly a subsidiary of **Overly Mfg. Co.**, Greensburg, Pa., has been consolidated with the parent company. Homer A. Wehe continues as vice president and general manager of the new division, McAleenan Plate Fabricating Div. George Tierney is vice president-sales.

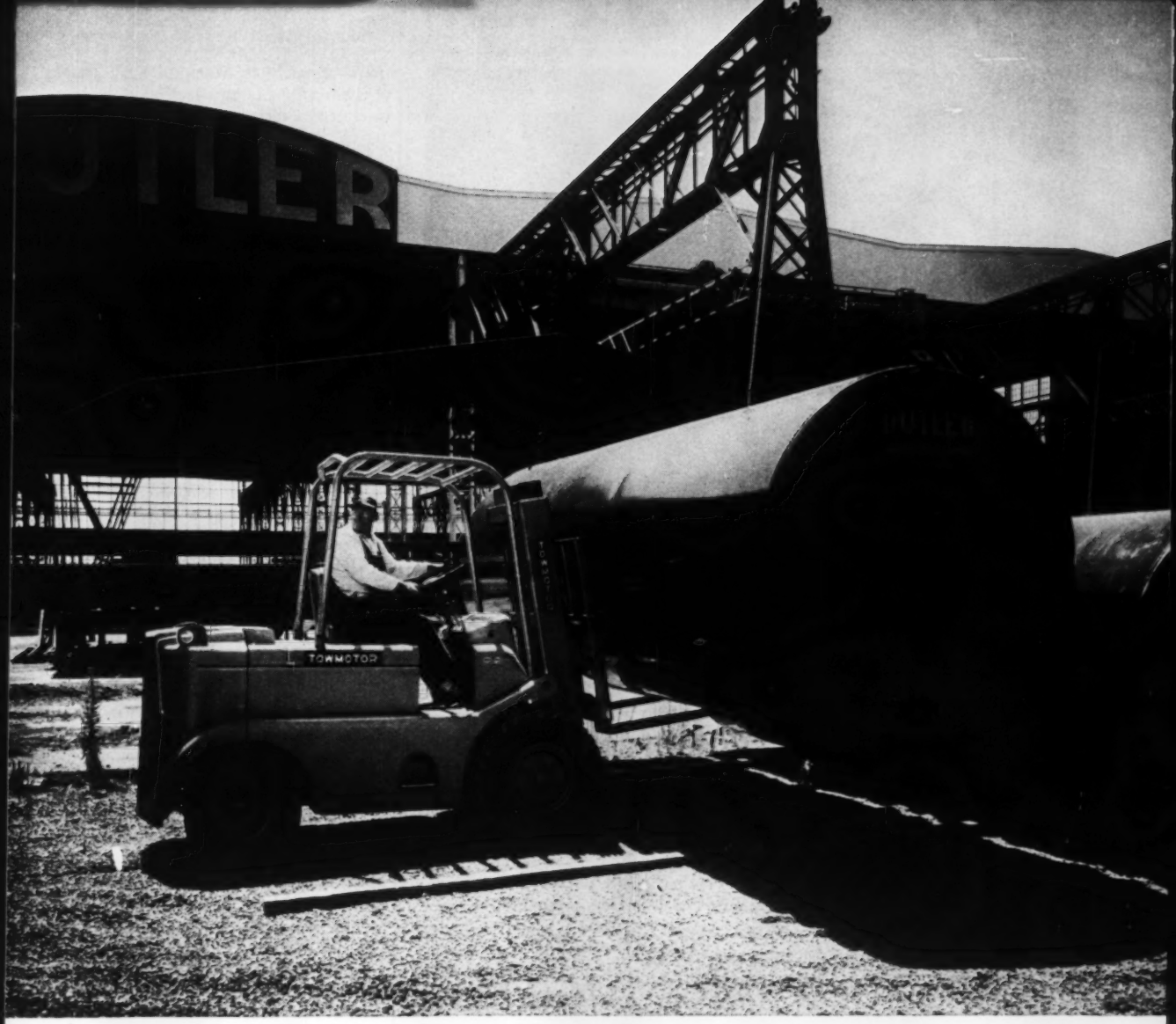
NEW PLANTS

Campbell Chain Co., York, Pa., opened a plant at Alvarado, Calif. The building covers 130,000 sq ft of office and manufacturing facilities. Equipment includes heat treating and annealing furnaces and wire drawing, forming, and welding machinery.

Cullman Products Div., Serrick Co., formally opened its plant at Cullman, Ala. The 30,000 sq ft plant is producing aluminum, stainless steel, and anodized trim for automobiles.

ASSOCIATIONS

Cutting Tool Manufacturers Association, Detroit, elected these officers: President, G. N. Popham, Gorham Tool Co.; vice president, K. R. Beardslee, Metallurgical Products Dept., General Electric Co.; and treasurer, G. R. Smith, Na-



New Towmotor "Pace-Maker" Model Fork Lift Truck

Strength to spare!

From tread to mast a Towmotor Fork Lift Truck is *built to last.* Its all-welded chassis—special carbon-steel carriage—one-piece forged forks—reserve-power engine—*rugged construction from the floor up!*—give Towmotor a margin of extra stamina that outlasts any truck doing anywhere near the same day's work.

See how you can apply this strength to *move more goods, faster, at less cost.* Ask for new "Pace-Maker" Booklet SP-23 . . . and Certified Job Studies applying to your type of handling operations. (Also ask about new foot-controlled *Towmostatic Drive,* available *now* on some Towmotor models.) Write Towmotor Corporation, Cleveland 10, Ohio.

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Ceramic engineers examine new LC-R Silica Brick roof.

20% LONGER ROOF LIFE with LC-R Silica Brick

A large western steel company reports that installation of LC-R Super Duty Silica Brick increased their open hearth roof life by 20% over a one-year period. And in comparison with the next best refractory, LC-R Silica Brick averaged 13% more heats to the first patch. This is a remarkable record—another instance where Porter products help keep the refractory cost per ton down.

THE REASON: LC-R Silica Brick is composed of carefully selected raw materials, and is under strict quality control through every step of its manufacture. The result is a stable product with uniform characteristics and consistent quality. Users depend on it to perform with a minimum of variation in service.

For further information write to *Laclede-Christy Works, Refractories Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa. In Canada, H. K. Porter Company (Canada) Ltd., Guelph, Ont.*

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tional Broach & Machine Co., all of Detroit. Martin J. Ewald was re-elected executive secretary.

G. A. Gilbertson, Frank G. Hough Co., Libertyville, Ill., was elected president of the **Construction Industry Manufacturers Association,** Chicago.

Aircraft Castings Association has been chartered under the laws of California. Allen M. Slichter, Pacific Alloy Engineering Corp., San Diego, Calif., is president. Inquiries to the association should be addressed to the secretary, W. W. Stevens Jr., Stanley Foundries Inc., 6009 Santa Fe Ave., Huntington Park, Calif.

NEW ADDRESSES

Picker X-Ray Corp., White Plains, N. Y., moved its branch office to 75 Varick St., New York, N. Y. The office is in charge of S. T. Green, Picker products manager.

Convair Instruments, a facility of Convair Div., General Dynamics Corp., San Diego, Calif., moved to larger quarters at 3595 Frontier St., in San Diego. The project was known formerly as Datafax Instruments and had its headquarters at La Jolla, Calif.

Texas Eastern Transmission Corp., Shreveport, La., will move the offices of its financial vice president, treasurer, secretary, and director of public relations to the Memorial Professional Bldg., Houston, Tex. The moves will be made over the next several months.

NEW OFFICES

Pittsburgh-Des Moines Steel Co., Pittsburgh, opened district sales offices at 200 E. 42nd St., New York, N. Y., and at the company's new fabricating plant at Curtis Bay Station, Baltimore, Md. J. E. O'Neil is the New York district manager. The Baltimore office is under the direction of C. R. Ford.

UNIFORM QUALITY of KEYSTONE WIRE means UNIFORM STAPLES for SPOTNAILS, INC.

Spotnails, Inc., Evanston, Ill. and Los Angeles, Calif., produces quality staples by the millions for use by building, crating, millwork and furniture industries. Mass production of these low-cost fasteners demands a quality wire that runs all day without a moment's trouble . . . and produces a staple with correct temper and uniformity for perfect continuous operation in automatic guns. Keystone galvanized preformed staple wire meets these specifications. Its uniform galvanized coating permits precision forming without flaking, and keeps the machines operating on a continuous basis.

Keystone representatives work with Spotnails designers to produce wire with just the right qualities for mass production and perfect performance. This close, confidential cooperation is available to you, too. Tell us your wire forming problem—we'll help you solve it!

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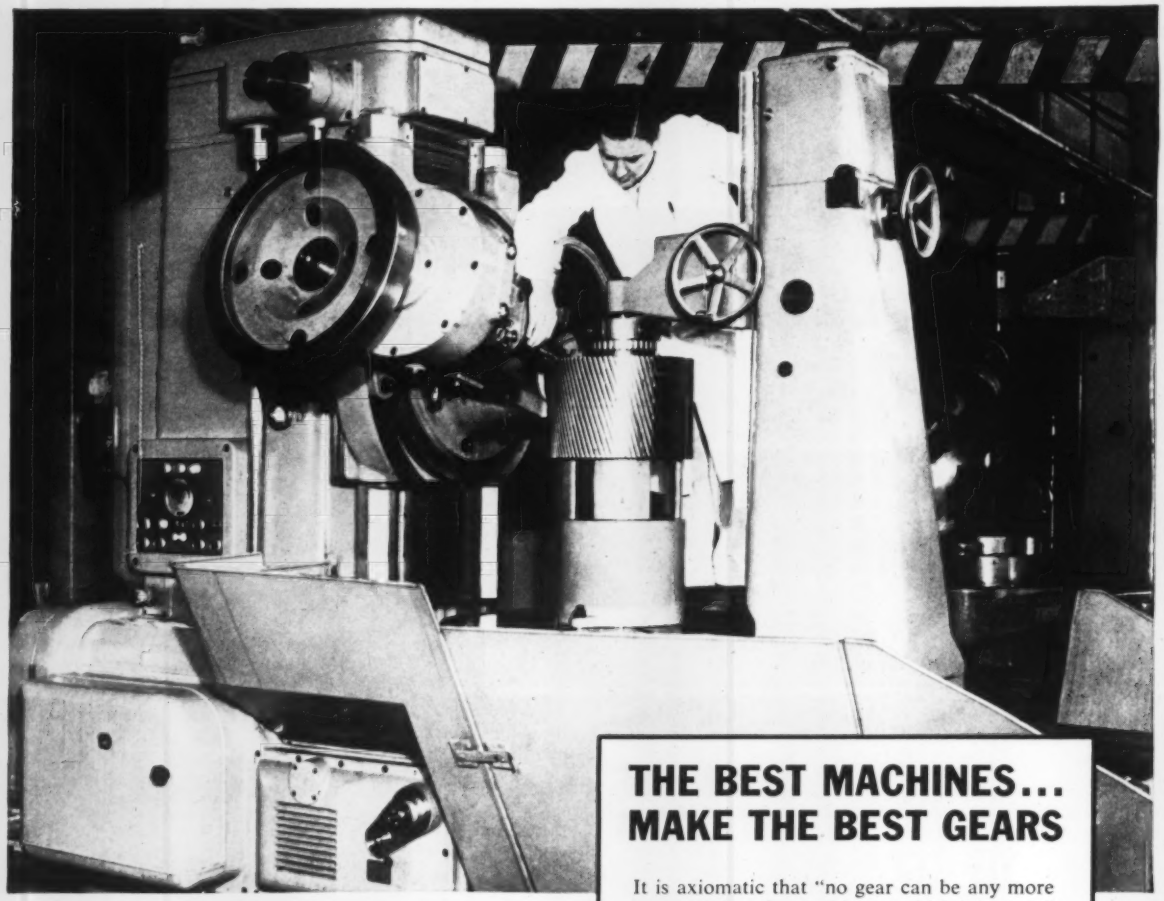
KEYSTONE

WIRE FOR INDUSTRY

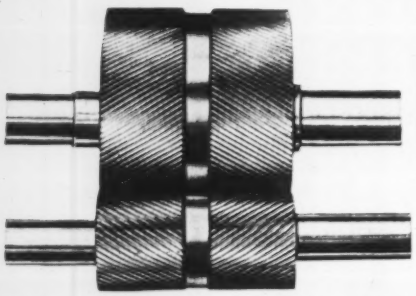


THE BEST MACHINES... MAKE THE BEST GEARS

It is axiomatic that "no gear can be any more accurate than the machine on which it is made" . . . to this end we have continually installed the most modern and accurate gear machinery for producing all types and sizes of gearing . . . these machines are operated by skilled gear craftsmen . . . but even this is not enough at Phillie Gear, for all gears must be checked and analyzed on the latest testing machines. *There's no compromising with Quality at Phillie Gear.*

Indicative of the standard of precision required of our manufacturing equipment is the gear hobber shown above. This machine has a special high accuracy table drive which is maintained accurate within 20 arc seconds. This accuracy is significant in consideration of the fact there are 1,290,000 arc seconds in a circle.

When you think of gears—think of Phillie Gear. Write for a free copy of our 76 Page Gear Book—a complete data book on all types of gears.



A set of large opposed Helical Gears and Pinions made for a high speed, single reduction drive . . . gears are carefully finished shaved for quiet operation. Philadelphia now has ultra precision facilities for tooth grinding up to 72" in diameter.

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MOLYBDENUM PROGRESS—A new one-step process for making pure molybdenum powder is five to eight times faster than two-step processes, says Metals & Residues Inc., Springfield, N. J. Its product is of higher purity and uses heat more economically. The percentage of recovery is also said to be greater. Dr. B. H. Davidson, technical director, estimates savings may reach 30 per cent. Significance: Growing emphasis on high temperature materials has increased the demand for the metal in protective coatings and as an alloying element in the atomic energy and missile fields. Benefits of the process will also be extended to other refractory metals like tungsten.

PACKAGED IGNITION—Transistors are the basis of a new high voltage ignition system for automobiles. The maker, Electric Auto-Lite Co., Toledo, Ohio, says the system is maintenance-free and that distributor contacts and condenser replacements are unnecessary. The entire package is slightly larger than a conventional ignition coil. Voltage output is uniform at high and low engine speeds. (Output of regular systems drops 50 per cent at high speed.) Price: Comparable to power steering package.

DIAMOND POTENTIALS CITED—Now that natural and synthetic stones are vying for your business, you may find it profitable to check into new industrial processing applications. J. D. Kennedy, Metallurgical Products Dept., General Electric Co., Detroit, told the Society of Mining Engineers in San Francisco that the original price of $5.10 per carat for the manmade product has declined considerably and that quantity is unlimited. He also pointed out that diamonds are five times harder than materials next in hardness.

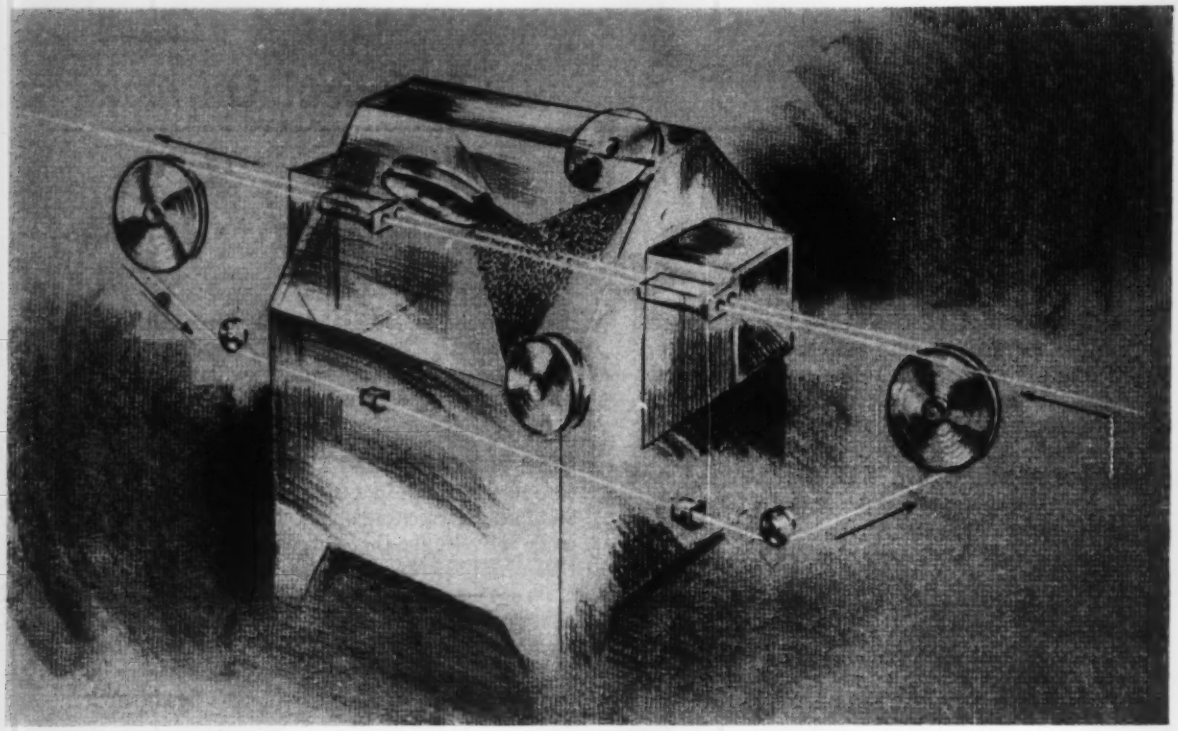
BETTER FLUORESCENT LIGHTING—Cheaper, brighter fluorescent lighting is the object of a transistorized device being developed by General Electric. Its Nela Park group says it will make high frequency lighting systems more practical for the small and medium sized shops. The efficiency of such systems is now limited by the large converting devices needed to change 60 cycle current to 450 cycles, 600 volts. All users are expected to benefit since the transistors can be placed next to the lighting, eliminating the need for high voltage lines.

DEEP HOLE ROUGHNESS—How do you measure surface finish in a 5/32 in. hole 2½ in. deep? Stanford Research Institute, Menlo Park, Calif., made a device for that purpose for the California Pellet Mill Co., San Francisco. It's used to check a rotary die which extrudes feed pellets and depends on a high quality surface for efficient operation. Sensitivity is 0.0001 in. Brush Instruments Div., Clevite Corp., Cleveland, has made one that will detect 0.000001 in. defects, although depths are limited to 2 in. in holes ¼ in. in diameter.

HIGH TEMPERATURE RESEARCH—A fundamental study of metals which dissolve in their own salts has shown that it may be a promising method for purification. Nickel, for example, dissolved in nickel chloride at 1800° F will recrystallize, leaving the impurities in the salt solution. The object: A more practical way of refining metals or a new way to produce metals in new forms, says Stanford Research Institute, Menlo Park, Calif.

ALUMINA FROM COAL—Mining interests are digging into the possibility of recovering high grade alumina and aluminum sulfate from coal mine wastes. Laboratory and pilot plant operations have been going for about a year, says North American Coal Corp., Cleveland.

STRIP FROM SCRAP—If you dislike throwing away almost useful pieces of thin sheet metal, you'll welcome a butt seamwelder which joins several scraps into large pieces that can be worked just like a single piece. The method, proposed by Precision Welder & Flexopress Corp., Cincinnati, is being tried by automen and appliance makers and is being touted as capable of saving several million dollars a year in those areas. Early reports indicate that some users have been able to cut their scrap wastage in half.



Drawing shows method of descaling one strand of rod in a double pass through the abrasive blast. The three shotblasting wheels are set 120 degrees apart

Wire Prepared for Drawing By Mechanical Descaling

Method used by fastener manufacturer is competitive cost-wise with pickling and drawing. The minutely cupped surface holds lubricants, is smoothed out in drawing

PLANTS that cold draw wire, rods, bars, and other shapes can eliminate a costly pickling solution disposal problem by changing over to mechanical descaling methods.

Automatic descaling also eliminates multiple handling of material, provides fast cleaning, makes strand cleaning and coating possible, and gives a good finish for coating and die lubrication.

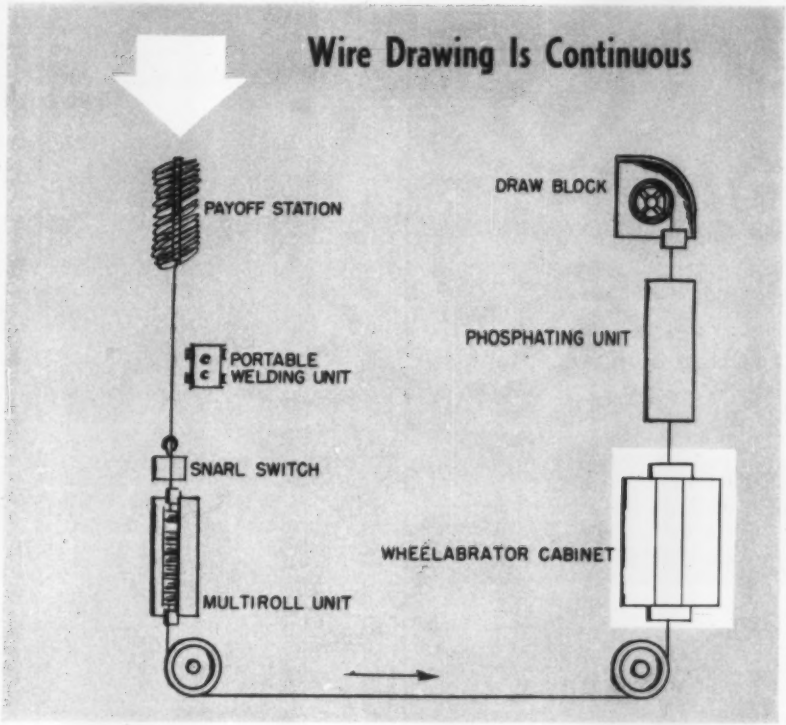
• **Case History**—At Lamson & Sessions Co., Cleveland, rods are descaled, coated, and drawn into cold header wire in a continuous operation. More than 4 million lb of wire have been processed and made into bolts since the equipment was installed in mid-1957.

Kenneth J. Sorace, chief project engineer, says production costs of the mechanical descaling and drawing process are competitive with pickling and drawing. The company has blast cleaned SAE 1016, 1021, and 1038 wire in its new facilities. Production averages 2500 lb of wire per blasting hour. Rods 13/32 in. and under constitute the bulk of blasting production; it is expected that higher tonnages can be obtained with larger rods.

• **Why Descaling**—The decision to install mechanical descaling in a new plant was prompted by a survey to determine the cost of reclaiming or neutralizing waste pickle liquors and a year's operating data from a pilot blast cleaning line.

The company now has three Wheelabrator shotblasting machines. They are incorporated into automatic processing lines together with coating units and draw blocks. Two lines have phosphating units. The other has a lime coater but will be converted to a phosphating machine.

• **Wire Processing**—Wire is fed



Wire drawing setup at Lamson & Sessions. The welding unit is used to join coils of rod into a continuous strand

from a payoff reel or flipper, through a snarl safety switch and a multiroll unit that produces back drag to keep the line taut, then into the blasting machine. From descaling, it goes through the coating bath and into the drawing block.

Equipment can be placed in a straight or U-shaped strand line. The U-shape allows one man to operate the line since his payoff reel and draw block are close together.

• **Blasting Units**—The Wheelabrator machines have three shot-throwing wheels set 120 degrees apart. The abrasive is fed from an overhead storage hopper to the center of the rotating wheel which hurls it against the wire.

Single or multiple passes through the blasting cabinet are possible. Lamson & Sessions set up multipass sheaves for both the blast cleaner and the coating line to obtain a suitable speed for drawing.

The company is using S-110 Wheelabrator steel shot. A heat treated grade in a pellet size (about 0.010 in.), it has a hardness of Rockwell C 45. Shot consumption varies with blasting units and with air separator settings; it averages about 50 lb every 4 hours of operation.

• **Welding Necessary** — In the strand process, it is necessary to run a continuous coil. Welding is a must. With care, different diameters and analyses can be joined satisfactorily. Welds may be cut out if desired, but sound welds can be run through the draw block.

Shotblasted rods can be drawn directly from the cleaning machine with suitable draw-box lubricants. But if lubricant coatings for extrusions are desired, the use of phosphating and stearate base drawing compounds gives a uniform glossy coating.

Control of the phosphating bath is not complicated. It is necessary to maintain the bath at a relatively high temperature to produce coating weights over 500 milligrams per square foot of surface.

The shot produces a minutely cupped finish which provides an excellent surface for carrying lubricants into the drawing die.

• **Maintenance** — Blasting equipment is cannibalistic. Steel shot abrades the interior surfaces of the blasting cabinet. Preventive maintenance is essential to avoid costly breakdowns and repairs.

Each cabinet is lined with hard manganese steel plates. If frequent and proper inspections are made, signs of wear can be spotted early and replacements scheduled before breakdowns.

• **Products Are Many**—Lamson & Sessions has made a variety of extruded, shoulder upset, and cold headed fasteners from the blast cleaned wire. The products meet all the requirements of industry and the company's own high quality standards. All products have been run in quantity without any special difficulty.

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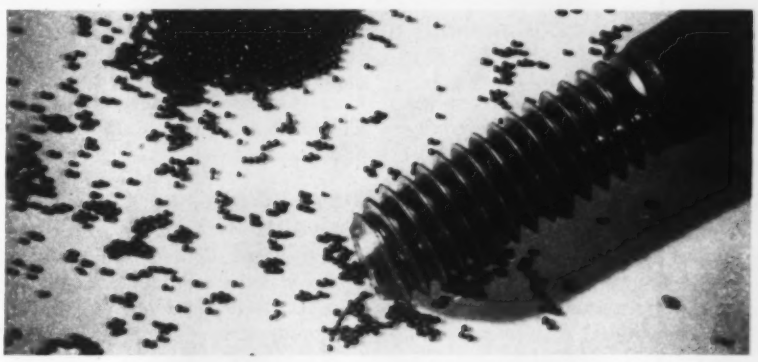
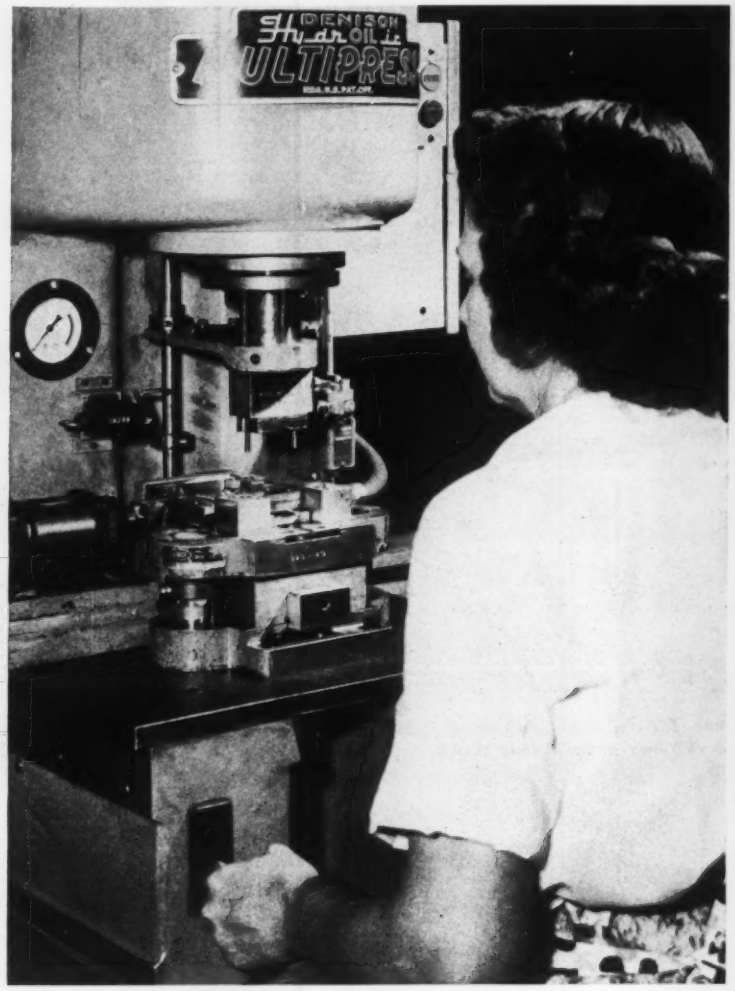


Lamson & Sessions uses 0.010 in. shot to clean boltmaking wire. The bolt shown in the photo for size comparison is 3/8 in. in diameter

Can You Justify Old Equipment?



Lower lamination section, gaged for the right thickness, is compressed and riveted on a 4 ton Multipress; it is then inserted in the motor field coil

Analysis showed that three presses, while increasing electric motor production, would cost only half as much per year as the hand assembly methods they replaced

IT may pay you to take another look at your old or obsolete equipment.

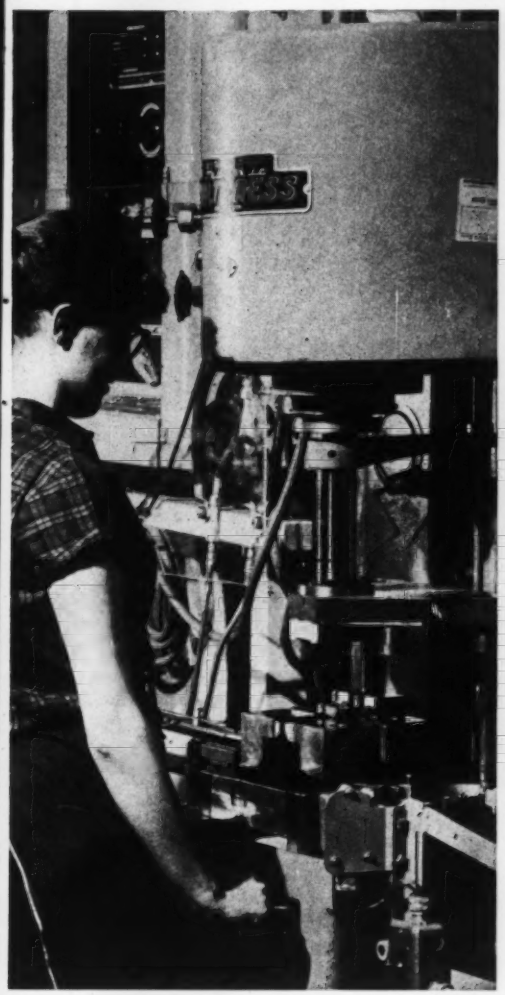
For example: A replacement analysis by Charles H. Goff, methods engineer at Barber-Colman Co., Rockford, Ill., showed that it would cost $4846 a year to own three new presses for assembling electric motors. The annual cost of retaining hand assembly methods was $9588. Promised annual savings: $4742. The three machines were purchased from Denison Engineering Div., Columbus, Ohio, American Brake Shoe Co.

• **Decision Easier To Make**—Since 1949, Barber-Colman has used modified interpretations of the Machinery & Allied Products Institute formula in its equipment justification program.

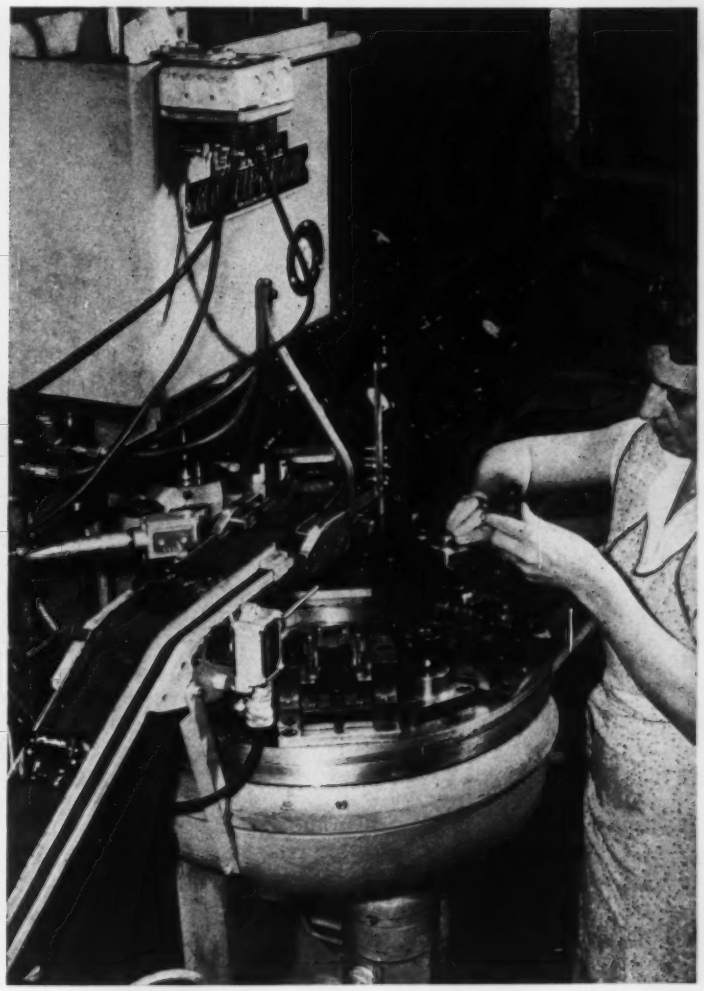
The method helps determine the best ways to invest capital. Management must weigh other factors, tangible and intangible, in deciding whether to buy new capital equipment, but the formula has helped many companies.

Each replacement analysis made at Barber-Colman includes a written supplement that explains details of the proposal. It states why the equipment is requested and gives detailed calculations of the operating inferiorities of proposed and presently used equipment. If it will cost less per year to own the proposed equipment than it will to retain equipment or methods another year, the purchase is recommended.

Every analysis is audited periodically after new equipment is installed, to see if terms of the justi-



Press bends shading rings, stakes mounting studs, and rivets upper lamination section



Upper and lower lamination sections are pressed together. A 6 station index table feeds parts to the press and ejects finished assemblies

fication are being met. That way management can appraise results of the program.

• **Machines Boost Production** — Three Multipresses were chosen for the assembly line on which the company's new, low cost, alternating current motors are made. Similar presses, used in other motor assembly lines in the plant, were reliable, easy to operate, and cost little to maintain. The three new machines have helped increase motor production.

• **Three Major Operations**—After the right number of laminations for required thickness is selected and gaged, a 4 ton Multipress compresses and rivets the lower section of the motor field lamination stack. The section is then inserted in the coil.

A modified, 8 ton, 2 cylinder Multipress, made to Barber-Colman specifications, is used to assemble the upper lamination sections. A microswitch controls the flow of sections to the press and prevents piling up. Shading rings, mounting studs, and rivets are inserted in the lamination sections. The lower cylinder of the press does bending, staking, riveting, compressing, and stamping operations. Pressure of the upper cylinder is more than that of the lower; pressures on the two cylinders are easily regulated.

Upper and lower sections of the lamination stacks are pressed together, forming dovetail joints, on a 4 ton, automatic Multipress, with a 6 station index table. Close tolerances on the table permit aligning top and bottom fixtures properly.

The press is stopped automatically if a lamination section is positioned improperly in the fixtures, if the operator's hands are drawn toward the pressing zone, or if an assembly sticks in the table ejection mechanism.

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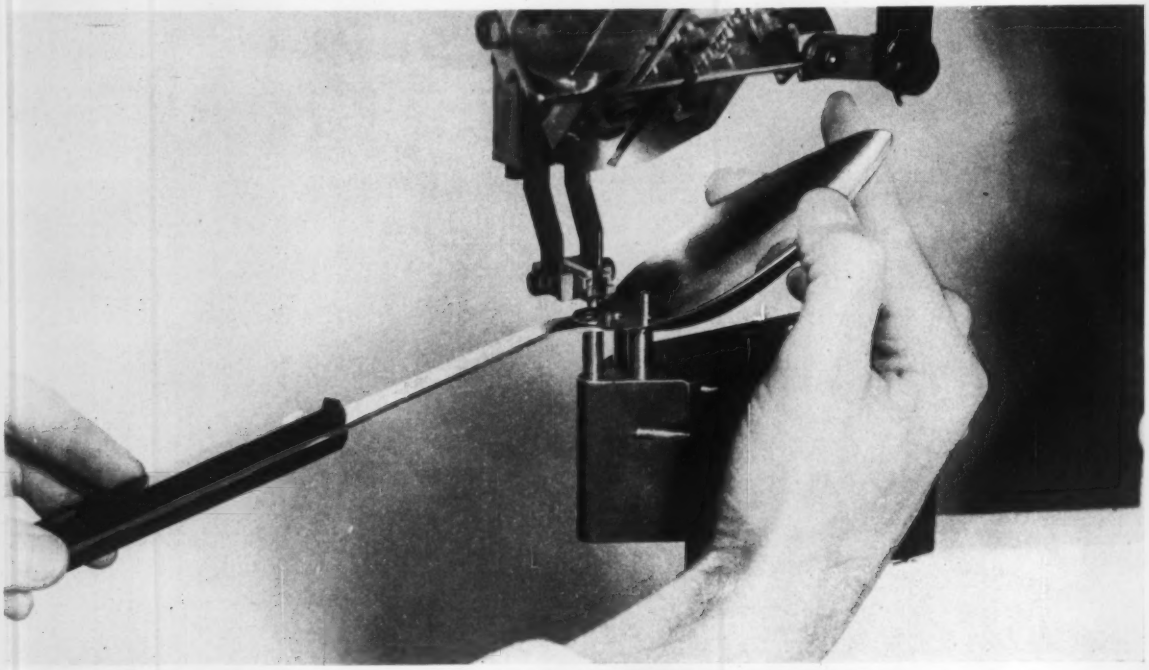


This powered machine has a special jaw advance that lets an operator position his part correctly. In practice, a controlled advance like this is available only in manual machines which are more flexible

How To Get the Most from Riveting

Many new advances in application and equipment should be considered. Here are some basic rules and how they are being applied to today's problems

By J. L. HULBERT
Manufacturing Superintendent
Milford Rivet & Machine Co.
Milford, Conn.

PRODUCTION people are still getting a lot of mileage out of rivets.

Reason: Riveting machines have been upgraded and modernized to fit automation concepts.

Here are some of the advantages of riveting small and medium sized components: Low cost, adaptability for fastening metallic or nonmetallic materials, automatic feed, high speeds on inexpensive rugged equipment, and a wide variety of shapes to fit many needs.

But you can't realize the benefits completely unless you select the right rivet, tooling, and machinery.

• **Selection** — The most important thing is machine capacity. Ask yourself: "What size rivet will it set?" Lightweight machines cannot handle big rivets; heavy equipment can damage fragile assemblies. Throat depth, stroke, actuation, mounting, and flywheel speed are also important.

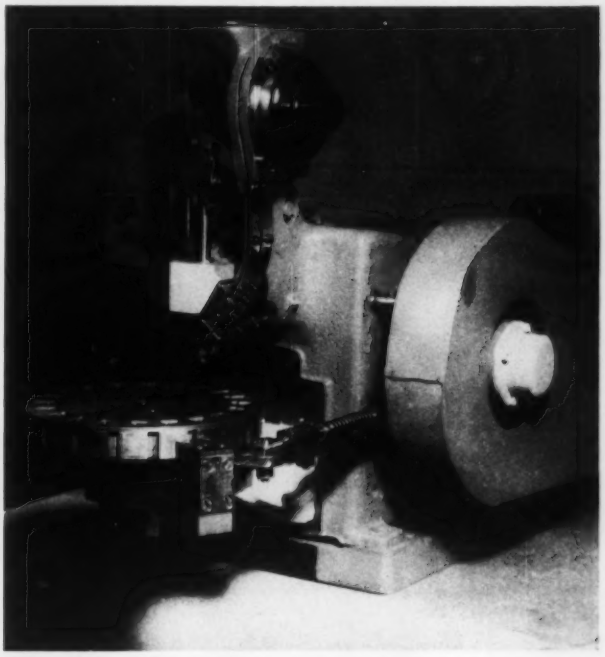
Throat depth, stroke, and other factors determine size limits. Some people have riveted components, only to find that the assembly couldn't be removed.

Stroke limits the depth of sections to be riveted and rivet length. Not all long stroke machines can handle all rivet sizes. Also, the longer the stroke, the slower the speed.

Actuation is more than just manual or automatic. Machines can have electrical or air power tripped by a treadle, switch, or solenoid.

• **Special Features**—You can also choose various hoppers, several spindles, setting mechanisms, and raceways, as well as a variety of overall dimensions.

Machine capacity ought to be based on the manufacturer's recommendations. It partly governs mounting, actuation, and powering features. For example, manual machines seldom set semitubular rivets over 5/32 in. in diameter simply because the operator effort is too great. Smaller sizes are attractive despite slower speeds because they



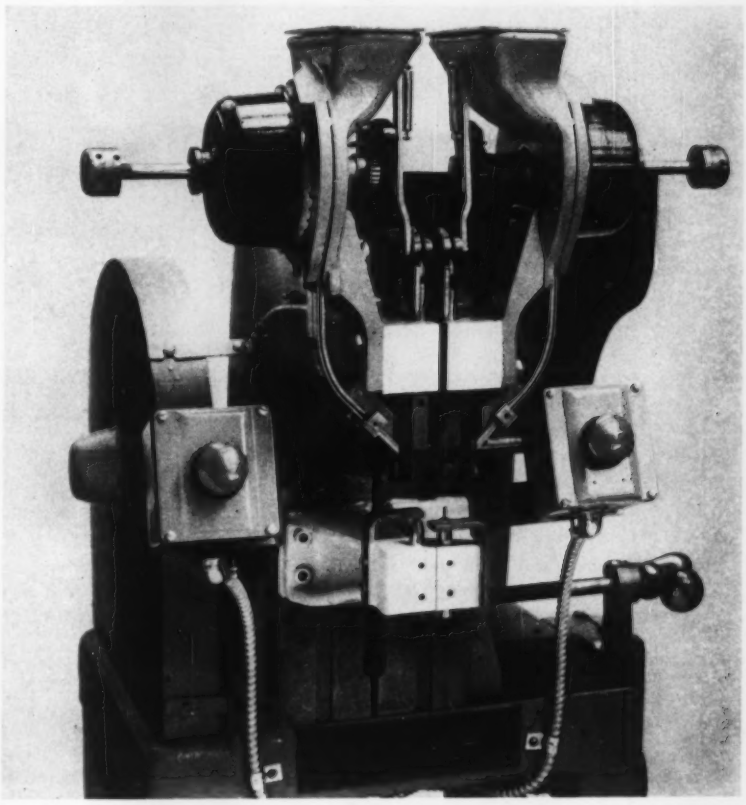
Because they're compact and versatile, pneumatic riveters are suitable for production lines. This special (left) has a rotary table which carries parts through five riveting operations. The indexing table controls the riveting heads. In the example at the right, the machine, not the table, controls the feed

are cheaper and an operator has greater control. Both manual and power machines have automatic hoppers. Machines capable of setting tubular steel rivets larger than 3/16 in. diameter usually are pedestal or frame mounted.

Length, as well as diameter, should be considered. Some equipment handles extra long rivets; others have large hoppers for extra storage capacity. Quick-change raceways increase flexibility. When work height varies, you can specify adjustable brackets to accommodate the product. If thickness varies, compensating devices relieve pressure at the end of the stroke.

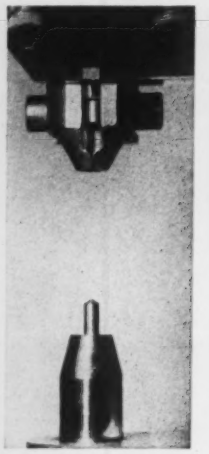
Multiple spindle riveters are getting a lot more attention as cost cutters. Some have fixed heads and others can be set for varying center distances on the work. Another improvement: Dual hoppers and a single spindle that will set two rivets at one blow.

Most riveters are driven by electric motors. The pneumatic riveter is a recent development. It is light, has a narrow head, large setting capacity, and good mounting flexibility. Some models can be used with in-line slide fixtures or rotary transfer tables for high speed

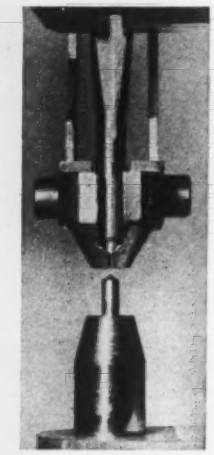


Here is a double spindle machine with adjustable centers. It sets two rivets with one stroke. When used on only one product, tooling with a fixed center is satisfactory

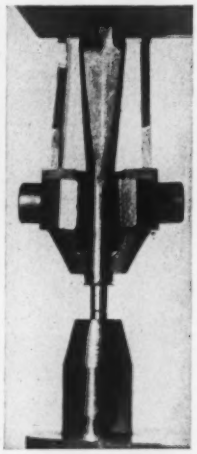
How Rivets Are Set



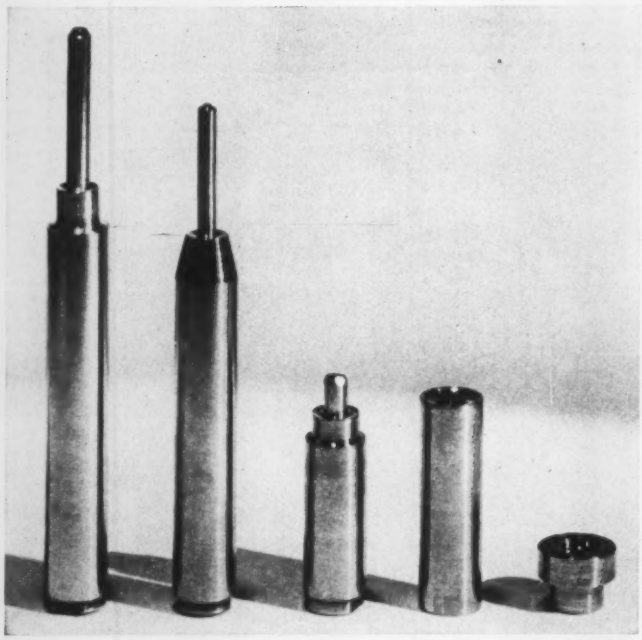
Rivet falls into position at start of cycle . . .



Plunger and rivet meet pin in rollset . . .



Pressure is ready to set the rivet



Typical anvils and tools (left to right): Semitubular rollset for drilled rivet, rollset for extruded rivets, anvils for clinching rivet caps, split rivets, and star set types

production assembly. Cycling speed at the high end is limited only by the rate at which the rivets will drop from the feed rail into the jaws. Stroke speed can be adjusted to control the impact on fragile materials like plastics and porcelain.

• **Setting Up**—In spite of an almost endless variety of anvil designs, there are only three basic clinches for small rivets: The rollset (for tubular rivets when maximum strength is required and wall thickness is not excessive); the star-set (for deep drilled or full tubular rivets and for thickness variations); the prong-set (for split rivets). Any may be used against the work, against a washer, or partly set so that an assembly turns freely.

• **Construction**—Drivers are smaller than a rivet head, but the working end fits the rivet head. The form, diameter, and straight portion of a driver must be properly sized and suited to the rivet.

Jaws are mounted on a sliding member in the casting which supports the hopper system. They are usually spring supported, so the rivet and driver can pass through. Construction depends on head diameter, shank diameter, and length.

Rollsets have four parts: Plunger, anvil, nut, and spring. Outer shape and size can be altered. The rollset is an important factor in obtaining a perfect riveting job.

It is good practice to incorporate hole sizes which will allow the use of standard plunger diameters. It provides maximum tool life and eliminates the tendency of the rivet to swell as it starts to clinch.

When an undersize pin (used to offset certain tooling difficulties) results in locked rivets, you can try pressure pads. A piece of dense rubber or a die spring can be placed around the rollset. Either tends to hold the work above the rollset form, allowing the rivet to make the assembly and upset. Some rollsets often have an integral, spring loaded collar.

In all cases, it is best to have the plunger pin protrude, so it can pick up and help center the rivet.

The anvil tip is another type setting tool. It is used with either split or deep-drilled rivets. It clinches the tips after the rivet has pierced the work.

Rosette or star tips accurately cut the rivet shank in equal segments. They can be used with washers. A plunger-type star set, with a star on the plunger tip, can be used with the deep drilled rivet. It is helpful where a portion of the work is pierced blind and the other component is located by means of the proper size hold and plunger.

Many ingenious devices reach into limited spaces. But it is best to avoid small, fragile tools—they are expensive and easy to break.

at Bridgeport Brass Company, Indianapolis, Indiana

Continuous annealing and pickle line with USS LORIG-ALIGNER Strip Tracking System increases capacity 12,000 lbs. per hour

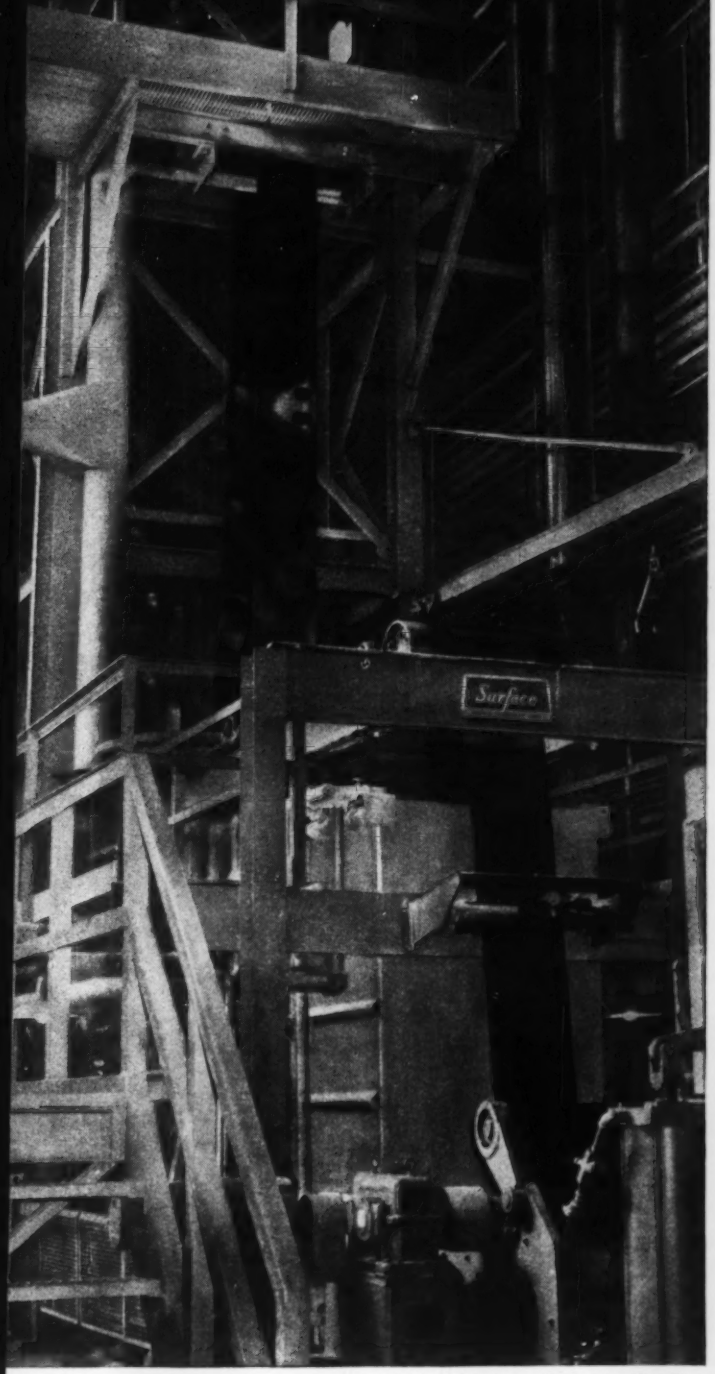
THE installation of the Bridgeport Brass continuous annealing and pickle line in August 1957 has increased their strip producing capacity 12,000 lbs. per hour, with a corresponding increase in over-all quality and yield.

"There's over 800 feet of strip in this line," says Plant Engineer R. J. Gardner. "And we have no trouble with strip centering or alignment. The LORIG System has prevented tracking problems."

The LORIG-ALIGNER Strip Tracking System is adaptable to processing lines in both the ferrous and nonferrous metals fields and provides constant control of strip or web alignment. Centering and aligning forces are inherent in the "system" since the specially designed complement of rolls has the ability to maintain strip material on the strip pass-line without the use of complicated exterior sensing and control devices.

For additional information about the LORIG-ALIGNER Strip Tracking System, fill in the coupon.

USS and LORIG-ALIGNER are registered trademarks



General view of entry end of annealing line.

The brass strip passes over a Type II LORIG-ALIGNER Roll and under the pinch roll as it enters the line cleaning unit. Shown here are Mr. Fred Ennis, Foreman; Mr. R. J. Gardner, Plant Engineer; and Mr. W. C. Roll, Supervisor of Plant Enginering, Bridgeport Brass Company's Indianapolis plant.

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

United States Steel

USS

United States Steel
Room 2801, 525 William Penn Place
Pittsburgh 30, Pa.

Please send your booklet, "LORIG-ALIGNER Self-Centering ROLLS."

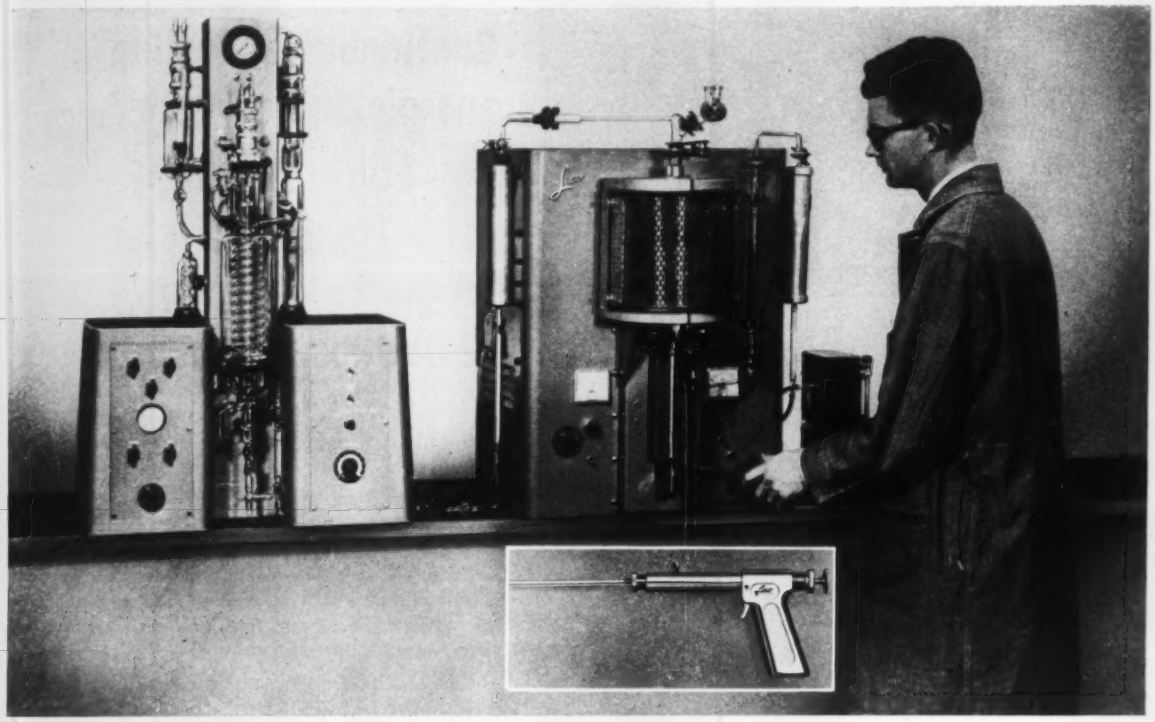
Name _____

Company _____

Address _____

City _____ **State** _____

(Please Print)



Analyzer can be operated with unskilled help, claims the maker. Gun (inset) aids sample preparation. Trigger releases plunger which sucks molten metal into a glass tube

Fast Oxygen Analysis Speeds Steelmaking

Several steel firms are employing a new device which determines oxygen content of steel samples in 5 to 8 minutes. Accuracy is within 0.0002 per cent

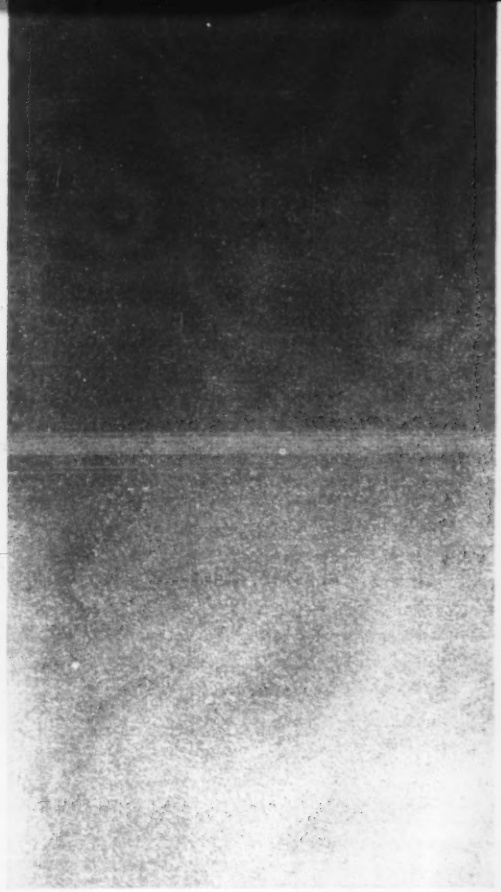
METALLURGISTS have a new device that speeds determination of oxygen in steel samples.

Called a conductometric oxygen analyzer, it can process a 1 gram sample in 5 to 8 minutes with an accuracy of 0.0002 per cent. A number of steel firms have started to use the instrument. One in eastern Pennsylvania replaced a vacuum fusion system which took nearly 45 minutes per sample.

• **Operation**—Samples are prepared and placed in a graphite crucible which is held inside a reaction tube or furnace. An inert gas is purified and passed over the crucible while it is heated inductively. Oxides in the sample reduce to carbon monoxide which mixes with the inert gas. After passing the mixture through an oxidizer, carbon monoxide becomes carbon dioxide which is measured in a conductivity cell (called a conductometric analyzer).

The cell is an electrical device (Wheatstone bridge) incorporating some barium hydroxide. When carbon dioxide is passed through the chemical, its resistance changes and careful measurements can be correlated with the percentage of oxygen in the sample.

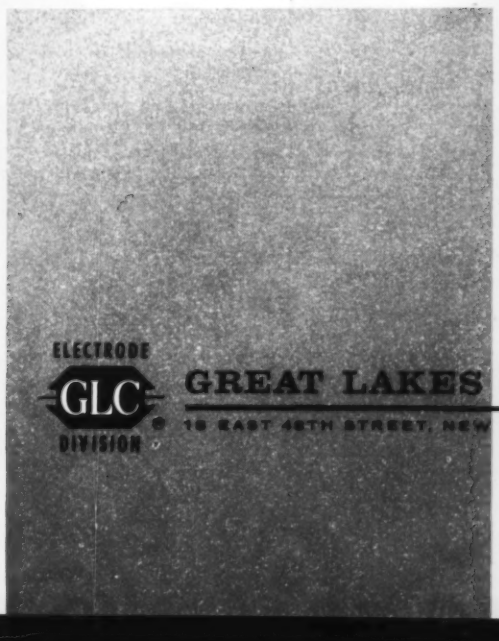
• **Components** — The equipment combines a purification unit for the inert gas, a high frequency induction furnace with reaction tube, and the conductometric carbon analyzer. The maker, Laboratory Equipment Corp., St. Joseph, Mich., says the system is easy to install, doesn't require a glass blower, and



IN THE FINAL ANALYSIS

• • • the superior quality of an electrode is a major factor in lowering the per-ton cost of electric steels.

PRODUCTS ELECTRODE GLC DIVISION YOU CAN TRUST



ELECTRODE GLC DIVISION

GREAT LAKES CARBON CORPORATION

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Third Conference on Manufacturing Automation

March 23, 24, and 25, 1959

Purdue University, Lafayette, Ind.

For production executives, manufacturing engineers, and administrative managers who plan, design, and install automated systems for industry.

Topics: Organization and Costs, The Process, Handling in Process, and Control of Operations.

Cosponsored by
School of Mechanical Engineering
Dept. of Industrial Engineering
and
AUTOMATION
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MONDAY . . . . . SESSION I & II . . . . . MARCH 23, 1959

Developing Automation for Flexibility of Output

A PANEL—Manufacturing Engineering—IBM, Endicott, N. Y.
1. ORGANIZATION—**KEITH BENNETT**, Project Engr., Test Equipment Engineering
2. STUDY OF OPERATIONS—**GEORGE PHILLIP**, Project Engr., Mfg. Research
3. DEVELOPING THE HARDWARE—**ALFRED JOHNSON**, Project Engr., Mfg. Research
4. DATA PROCESSING—**WILLIAM ANDRUS**, Manager of Applied Computation
5. ECONOMICS—**RICHARD SEILER**, Technical Ass't to Ass't Mfg. Engr.

Buffet Lunch — **Pioneering in Automation**
WILLIAM ALDEN, President, Automation Management Inc.

Industrial Engineering's Role in Automation of Operations
H. H. YOUNG, Assoc. Prof., Dept of Industrial Engineering, Purdue University

Cost Analysis and Machine Replacement
ROBERT A. LOWE, Managing Partner, R. A. Lowe & Co.

TUESDAY . . . . . SESSION III & IV . . . . . MARCH 24, 1959

Manufacturing Engineering and Machine Procurement
ARMIN FRANK, Manager-Manufacturing, Vacuum Cleaner Dept., General Electric Co.

Assembling Complex Devices
GEORGE WEISER, Chief Process Engineer, Delco-Remy Div., General Motors Corp.

Buffet Lunch — **Automation on the Farm**
E. W. LEHMANN, Prof. Emeritus, Agricultural Engineering, University of Illinois

Handling as the Key to Automation for the Small Company
JAMES R. SEBASTIAN, President, The Rapids-Standard Co. Inc.

Handling Products for Distribution
ALLAN HARVEY, President, Dasol Corp.

Banquet — **Guaranteed Annual Automation**
LEON GREENBERG, Chief, Div. of Productivity, U. S. Dept. of Labor

WEDNESDAY . . . . SESSION V & VI . . . . MARCH 25, 1959

Modern Developments in Control
DR. JOSEPH F. MANILDI, General Manager, Thompson-Ramo-Wooldridge Products Co.

Numerical Control of Production Machines
W. E. BRAINARD, Chief Engineer, Servo Machine Tool Div., Kearney & Trecker Corp.

Buffet Lunch — **Automating the Horses**
O. C. LEVY, Vice President, American Totalisator Co., Div. of Universal Control Inc.

An Institute for Manufacturing Engineers?
Chairman: **R. W. BOLZ**, Editor

• • •

● *FEE*

Fee for the Third Conference on Manufacturing Automation is $75 which will include the Banquet, the Buffet Luncheons, and a copy of the Transactions.

● *LODGING*

Rooms are available at the Union Club on the campus at $4 and $6 single, $6 double, and $7 to $9 twin. Room reservations may be made with the Union Club by the form supplied. Accomodations are also available at the Fowler Hotel in Lafayette (city bus to campus) from $3.50. Write direct. For those driving, reservations may be made at the Morris-Bryant Motel, Cedar Crest Motel, or Green Acres Motor Court (2-4 miles north on U. S. 52). For additional information, write K. E. Glancy, Div. of Adult Education, Purdue University, Lafayette, Ind.

Mail to: AUTOMATION CONFERENCE, Comptroller's Office (Conferences), Purdue University.

ROOM RESERVATION

Please reserve in the Union Club the accommodations checked:

Nights: Mar. 22 ☐ Mar. 23 ☐ Mar. 24 ☐

Single Bed—Bath ☐ Twin Beds—Bath ☐

If necessary, will share twin-bed room with another member ☐

Room will be shared by _____

Please send confirmation:

Name _____

Company _____

Address _____

CONFERENCE REGISTRATION

The following persons plan to attend the AUTOMATION CONFERENCE, March 23, 24, and 25, 1959 (name and title, please):

Name _____

Title _____

Name _____

Title _____

$_____ is enclosed for the registrations checked at $75 each. (Make checks payable to Purdue University.)

☐ Fees will be paid at registration time.

Name _____

Company _____

Address _____

can be operated by unskilled people. Also, there are no diffusion or vacuum pumps, seals, or gages, and it does away with heating mantles, cold traps, and mercury. Crucibles can be installed without positioning tools or wires. One crucible has a ten-sample life.

To start, the device is outgassed for 10 minutes at 4900° F with the crucible in position. It takes about 25 minutes to establish a working relationship between resistance and the percentage of oxygen.

You don't have to evacuate old gas as each sample is completed. In most cases, it takes only 1 minute to prepare the equipment for the next sample.

Tungsten, zirconium, titanium, and other metals can be processed in the same equipment.

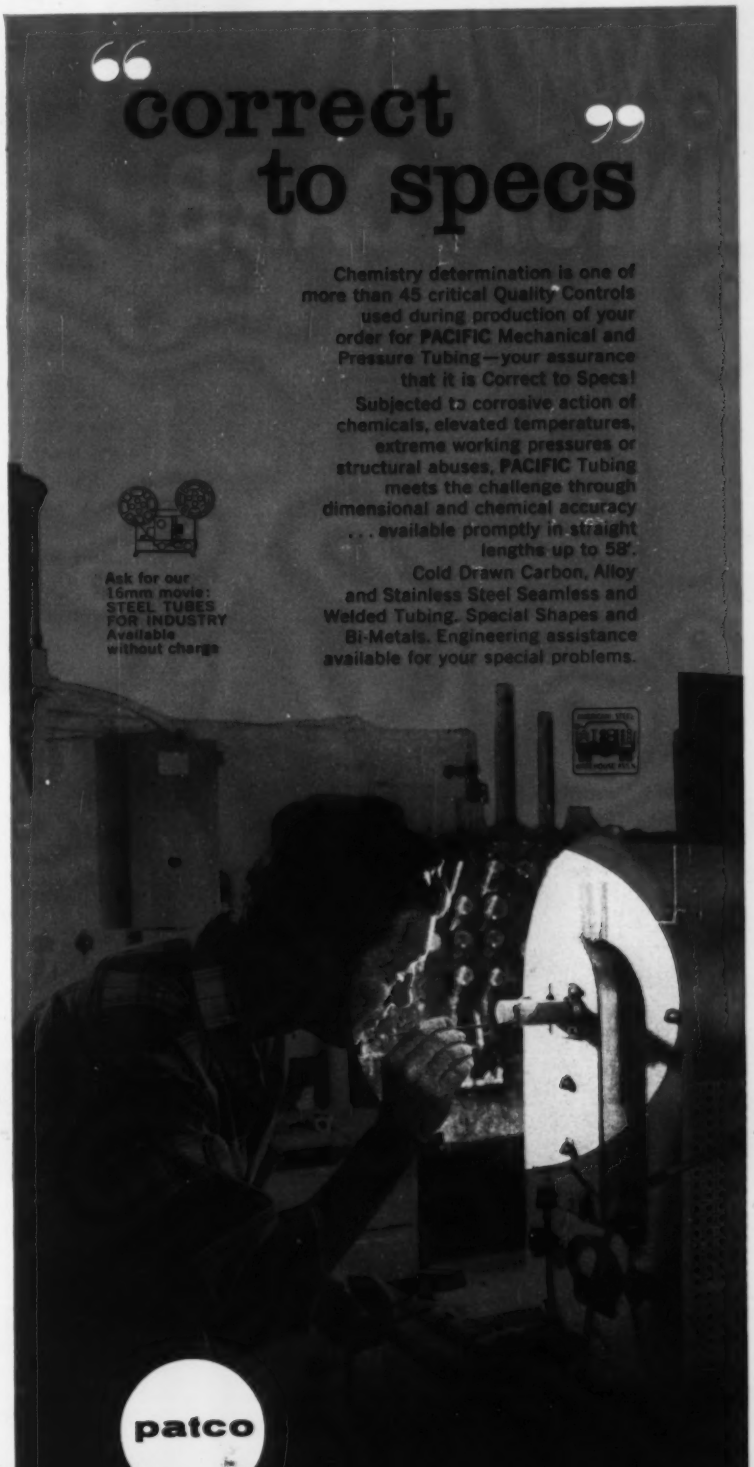
• **Auxiliary Equipment** — A sampling gun is a help in preparing samples. It employs a pistol-like handle and a triggering device which sucks a molten sample into a heat-resistant glass tube. The molten sample crazes the glass making it easy to remove. Samples, called pins, are clean and free of oxides.

Special Heading Wire Solves Problem

Cold forging of recessed-head screws was a problem for Midland Screw Corp.'s Millersport, Ohio, plant, says Frank Upp, plant superintendent.

Heading quality wire, while satisfactory for conventional head types, would split during the manufacture of recessed heads because of the pressure exerted on the head when indented. To meet the problem, a special heading screw wire made by Jones & Laughlin Steel Corp., Pittsburgh, was selected. It withstands maximum deformation in cold heading.

Operation: The wire is first cut to blanks in the header. The first blow upsets the wire and puts the head on. The second blow finishes the head and punches in the cross-shaped indentation. Then the threads are rolled on. Specs on the wire are tight. For example, the permissible tolerance on 0.133 wire is ±0.0005.


"correct to specs"
Chemistry determination is one of more than 45 critical Quality Controls used during production of your order for PACIFIC Mechanical and Pressure Tubing—your assurance that it is Correct to Specs!
Subjected to corrosive action of chemicals, elevated temperatures, extreme working pressures or structural abuses, PACIFIC Tubing meets the challenge through dimensional and chemical accuracy . . . available promptly in straight lengths up to 58'.
Cold Drawn Carbon, Alloy and Stainless Steel Seamless and Welded Tubing. Special Shapes and Bi-Metals. Engineering assistance available for your special problems.
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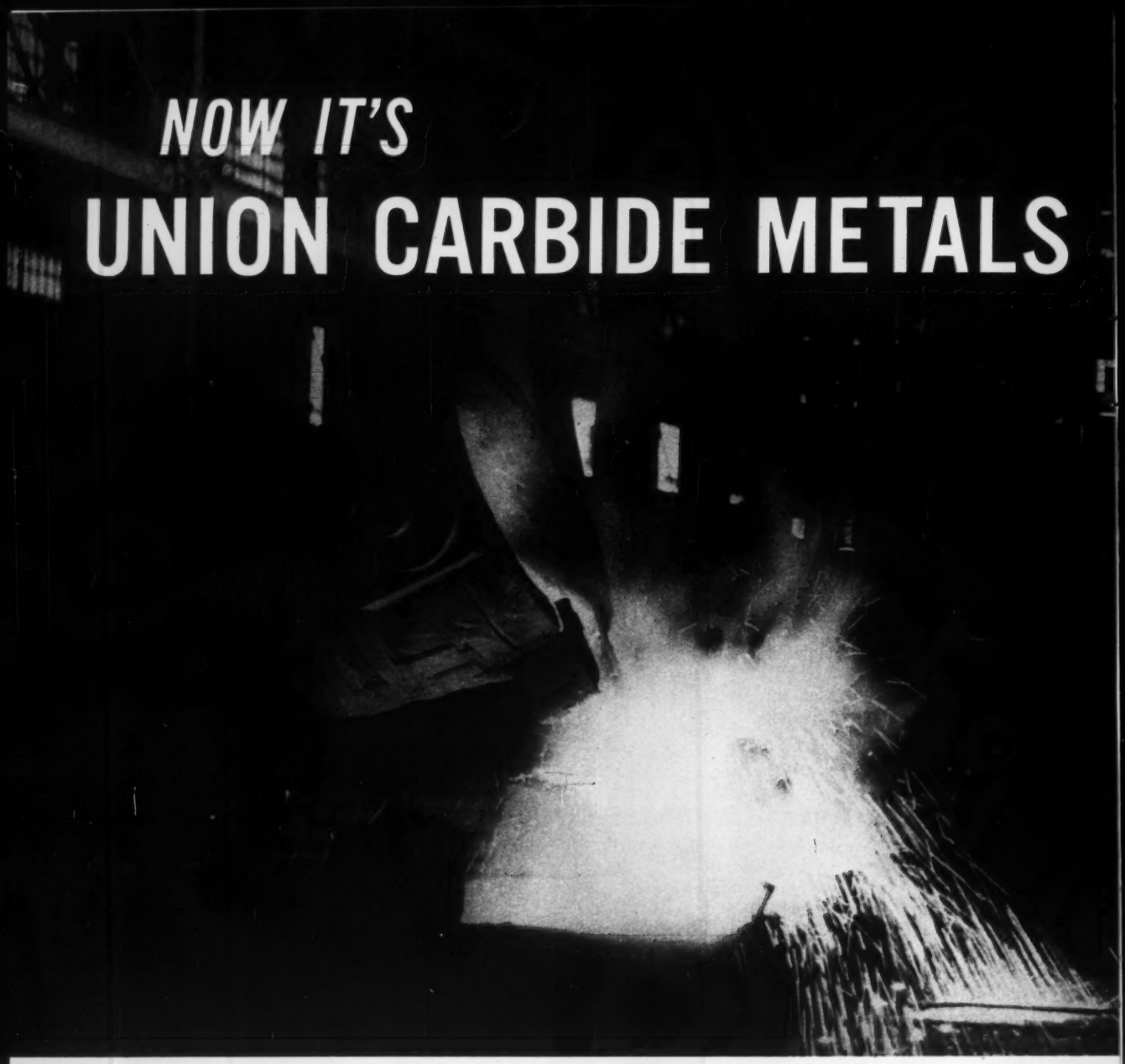
NOW IT'S
UNION CARBIDE METALS



Production Plus: A dependable supply of ferroalloys and metals is assured from six modern plants (three with their own power facilities) and seventeen warehouses.

Product Variety: More than 100 top-quality ELECTROMET brand ferroalloys and metals are available from Company plants such as this at Marietta, Ohio.

Research: The Metals Research Laboratories at Niagara Falls, N.Y. is one of the largest metallurgical research and development centers in the world.

Customer Service: Some of the country's best-qualified specialists in the proper use of alloying materials provide technical service to customers.

COMPANY

Known for over 50 years as
ELECTRO METALLURGICAL COMPANY, we have changed our name to Union Carbide Metals Company. This name will reflect more accurately the close association of this Division with Union Carbide Corporation.

This is a change in name only. The products, the people, and the earnest desire to serve you remain the same.

Our metals laboratories with a 500-man team of metallurgists, engineers, and technicians are carrying out extensive research and development programs in ferroalloys, pure metals, and metal chemicals. Technical assistance and other specialized services are available from our competent metallurgical staff. In addition, Union Carbide Metals Company is backed by the diversified resources of all the other divisions of Union Carbide Corporation. These are only a few of the many reasons why you will continue to get more for your money when you buy the familiar ELECTROMET brand products.

PRODUCTS OF UNION CARBIDE METALS COMPANY INCLUDE

Electromet Ferroalloys and Metals: Boron, calcium, chromium, columbium, manganese, silicon, tantalum, titanium, tungsten, vanadium, and zirconium. Also metal chemicals and metal compounds.

UNION CARBIDE METALS

Electromet Brand Ferroalloys and other Metallurgical Products

UNION CARBIDE METALS COMPANY
Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

"Electromet" and "Union Carbide" are registered trade marks of Union Carbide Corporation.

These operations can all be tape guided on this vertical boring and turning mill: Feed and traverse of the five-position turret head, ram, and saddle; indexing of the turret, and table speeds. It will machine oil valves

Broader Field for Tape Control Aim of Builders

IF YOU manufacture parts in relatively short runs, chances are you'll be a target of one of the most concerted drives machine tool builders have ever launched.

Reason: Builders know the aircraft industry is sold on numerically controlled machines—now they figure the big market is in other metalworking segments.

• **Case in Point**—Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., soon will deliver a 54 in. vertical boring and turning mill to the Gray Tool Co., Houston, for contour machining valve bodies.

Here are some of the reasons why Gray's management was sold:

Flexibility of tape control will make possible a major reduction in the lengthy setup time required on special oil field valves. This can substantially reduce the leadtime on parts—getting them to the customer faster and boosting Gray's share of the competitive business.

On complex parts, programming and preparation of tapes will be practical even for one-of-a-kind jobs, with the added advantage that duplicate parts can be reproduced accurately from the stored tapes at any time—even years later. It means that as Gray production men build their inventory of special and standard tapes, leadtime will be even shorter.

Gray managers feel that on long or frequent runs of simple parts, the tape control will reduce setup, machining, and floor-to-floor time substantially. Accuracies and production rates will be predictable, independent of operator skill.

No Panacea

Here is the expert's answer to the prospect who figures that by adding numerical control to a machine, he can tighten tolerances on parts.

Repeatability is boosted: As far as the tape is concerned, if the first part is right, the last one in the run will be, too. But tolerance is primarily a function of the machine itself. If you add tape control to a clunker, you get a tape controlled clunker for a sizable investment, nothing more.

Reliable Wear Tests

GM accurately predicts service performance with properly used laboratory testing

HOW do you evaluate new materials for autos without a lot of road testing?

General Motors Research Laboratories, in telling the SAE about its method of accelerated wear testing, says it relies on two developments: A constant friction machine and a high-unit-load tester.

• **Defines Limits**—Although admitting that such wear testing is frequently an unwanted stepchild, GM believes the developments can be relied on if you thoroughly understand the limitations.

"There can be no universal wear test which will select materials for all wear applications," says Dr. Robert F. Thomson of the research laboratories. But some tests give a preferential order to materials that can be correlated with service.

• **Example**—Laboratory tests of a cast iron cylinder on the constant friction machine showed a 3 to 1 improvement factor over other materials. Subsequent engine tests indicated a 6 to 1 improvement. That illustrates how an accelerated test will often rate materials to match service results.

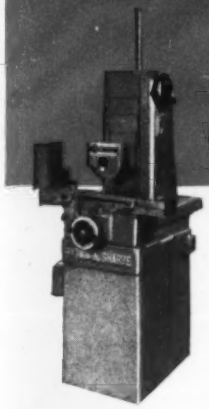
Constant friction tests also indicated certain aluminum alloys without wear coatings have satisfactory wear characteristics. Road testing confirmed the results.

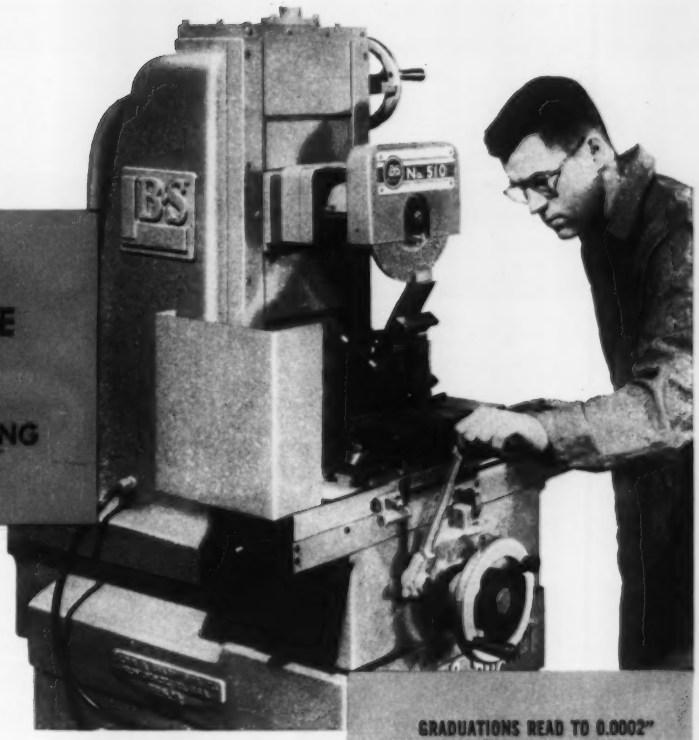
The high contact load wear test is used for studies of the effects of surface films on wear. Results suggest that surface films may be the factor that controls wear.

• **Caution Advised**—The GM researchmen found that there are some occasions when the tests can lead you astray. A sintered powder metal piston ring for diesel engines showed good wear resistance in the lab. (The objective was to inhibit wear with hard particles in the iron matrix.) But road tests showed high wear in the bore. That is why, says GM, performance predictions must include the possibility of change in limiting factors—in this case, something other than wear resistance was involved.

DESIGNED to meet today's toughest demands

THE NEW BROWN & SHARPE No. 510 SURFACE GRINDING MACHINE



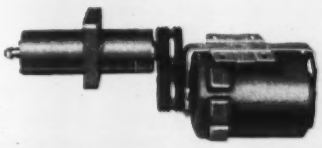


PRICED to meet today's equipment budgets

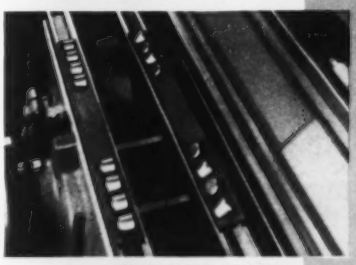
Tool and die shops, and other users of hand feed surface grinders, face increasingly tough demands today, — for high precision, for cost reduction.

The new B&S No. 510 Surface Grinder design is based on an extensive survey of these demands and needs. Add Brown & Sharpe's first-hand experience as tool manufacturing specialists, and you'll see why the new No. 510 provides the required plus in precision, work range, and efficiency.

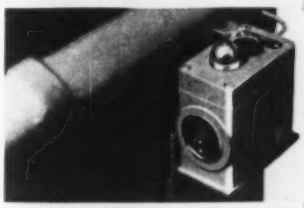
THE LOW COST of the No. 510 is a welcome surprise to everyone who sees its many advantages demonstrated. Get details. Why settle for surface grinders of limited performance and capacity, when the same investment will buy the new No. 510? For full information, write: Brown & Sharpe Mfg. Co., Providence 1, Rhode Island.



"FULL POWER" ORIFLEX DRIVE



LAPPED TABLE ROLLERS



"ONE SHOT" LUBRICATION

GRADUATIONS READ TO 0.0002" on the Spindle Elevating Handwheel, and on the adjustable dial of the Crossfeed Handwheel, which provides close control of transverse feed.

FULL TRAVEL TABLE OF 11" is attained by moving the Table Lever only 180°.

- **"ORIFLEX DRIVE"** to unit-type wheel spindle (left) is through five "O rings" from 1 hp motor in vibration-free mountings. The No. 510 is also available with a direct motor drive spindle.

RUGGED, CAST IRON spindle slide, upright, and table base distribute 95% of the machines' 1225 lb. weight above the heavy gage sheet steel base. Base cabinet provides liberal storage space for accessories.

- **TABLE** glides on precision ground and lapped straight rollers (left) forming 90° "V" and flat guide ways — permits easy, smooth operation and preserves precision alignment.
- **"ONE SHOT" OILER** (left) lubricates entire machine by depressing plunger.

MOVABLE SPINDLE UPRIGHT for crossfeed contributes to dependable precision slot and form grinding.

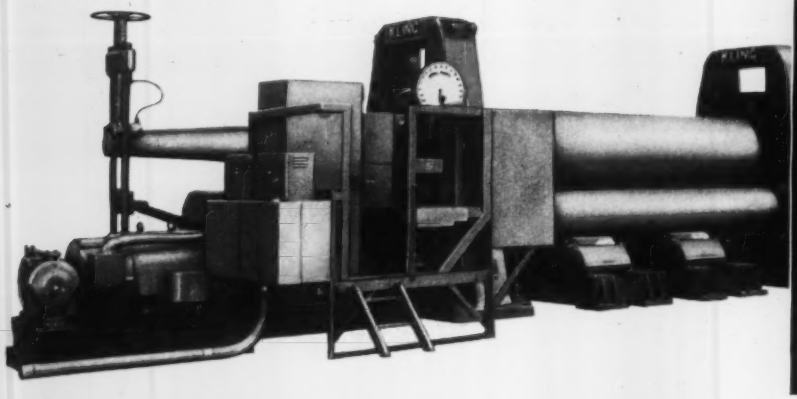
CAPACITY Grinds work 11" long, 5" wide, and 12" high with 8" dia. wheel . . . 12½" high with 7" dia. wheel.

PROGRESS IN PRECISION > FOR 125 YEARS

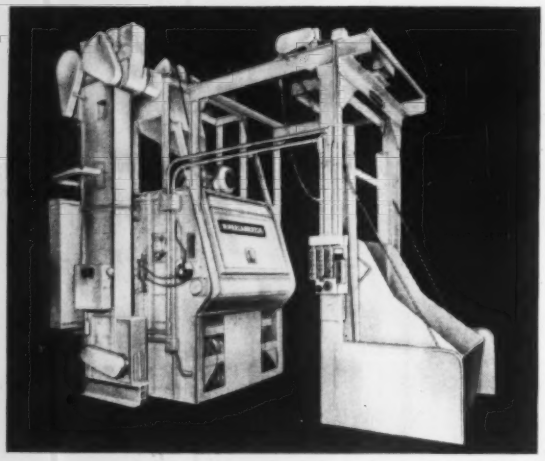
Brown & Sharpe > B&S

MILLING, GRINDING, AND SCREW MACHINES • MACHINE TOOL ACCESSORIES • PRECISION TOOLS • HYDRAULIC PRODUCTS • CUTTERS

The Kling Brothers Engineering Works manufactured this steel plate bending roll for one of the leading shipbuilders . . . it's completely equipped with Cutler-Hammer Motor Control and magnetic brakes.



American Machine & Foundry Company's Glen Mixer, used by the baking and pharmaceutical industries for mixing large batches, features Cutler-Hammer Motor Control.

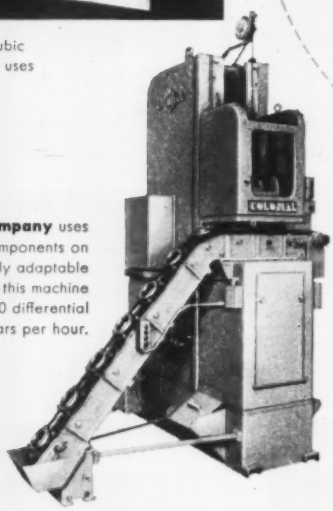


CUTLER-HAMMER CONTROL C-H

Choice of the leaders . . . the mark of better machines

The Wheelabrator Corporation's 14 cubic foot Super Tumblast abrasive blast cleaner uses Cutler-Hammer Motor Control as standard original equipment.

Colonial Broach & Machine Company uses Cutler-Hammer Control Components on their RU 15-48 model. Easily adaptable to fully automatic operation, this machine is capable of broaching 300 differential ring gears per hour.



The proper performance of any machine requires dependable, trouble-free service from the motor control which directs and protects it. This is why leading machinery builders use Cutler-Hammer Control. It installs easier . . . works better . . . and lasts longer. For prompt attention to your control requirements write Dept. E213, Cutler-Hammer Inc., Milwaukee 1, Wis.

CUTLER-HAMMER

Cutler-Hammer Inc., Milwaukee, Wis. • *Division:* **Airborne Instruments Laboratory.** • *Subsidiary:* **Cutler-Hammer International, C. A.**

Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation

Aluminum balls assure uniform bonding of irregular shapes. Assemblies are cured in an autoclave, then the blanket is removed and balls are recovered with suction equipment

Ball Bonding Technique Improves Aircraft Parts

Equipment can handle up to five 5 by 18 ft assemblies at one time. Components come out with smoother surfaces. Voids, formerly a problem, are now prevented

IF BONDING of irregular shapes is a bottleneck in your plant, you'll want to investigate ball bonding. (Aluminum balls are used to apply uniform pressure.)

It's an effective and economical process used at Twin Coach Co., Buffalo, in making aircraft subassemblies. The company is able to deliver parts to prime aircraft contractors with smoother surfaces, vital to high speed aircraft. Savings are realized through reduced tooling costs, fewer scrap losses, and reduced production time.

• **How the Process Works**—Aircraft parts are fitted to the master layout of the assembly, then cleaned, surface treated, and coated with liquid adhesive. A tape component of the adhesive system is applied to the parts being bonded. Components are then tacked together by heating.

Each assembly is laid out on a metal surface, called a platen, and covered with $\frac{1}{4}$ in. aluminum balls. Coated with a silicone based parting agent, the balls won't stick to the bonding adhesives.

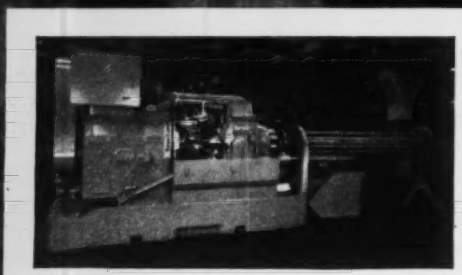
Platens are covered with a layer of asbestos and an autoclave blanket. After blankets are checked for vacuum leakage, assemblies are placed in an autoclave for curing. The equipment handles as many as five 5 by 18 ft assemblies at once.

The curing process is a critical one. Temperatures of 325 to 350° F, and pressures of 45 to 200 psi are applied, depending on the assembly. The components are then inspected, trimmed to size, painted if necessary, and delivered to the final assembly area.

• **Use Extended Since '55**—Twin Coach began research on the technique in 1955. Now the method is being used for all types of bonding. Materials bonded: aluminum to aluminum, aluminum to magnesium, and fiber glass to aluminum.

• **Problems in Bonding**—Before development of the new technique, bonding of irregularly shaped parts was a major problem for aircraft manufacturers. Adhesion of metal surfaces was often spotty.

Voids often appeared, weakening the components. They sometimes appeared as bubbles and gas pockets, making surfaces of parts irregular. That caused air friction and turbulence.



Acme-Gridley, 1¼" RB 8 producing 690 nozzle bodies per hour

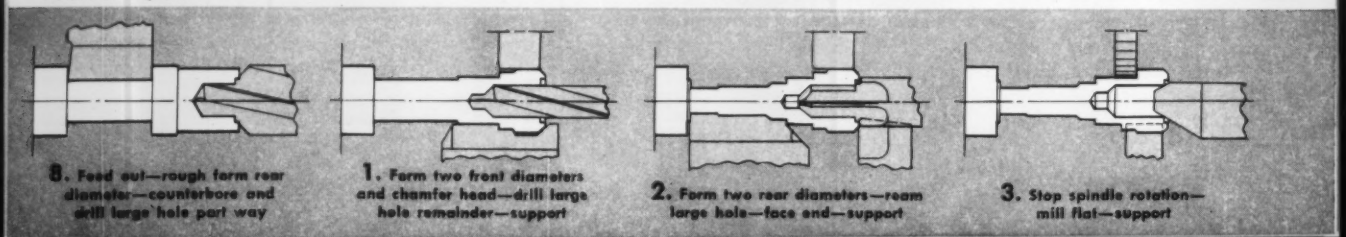
Close-up of tooling zone showing 5th, 6th and 7th positions.

ACME-GRIDLEY ELIMINATES SECONDARY OPERATIONS...

for Eagle Manufacturing Company

- Direct Cost Reduced 48%*
- Production Time Reduced 64%

* Details on request



8. Feed out—rough form rear diameter—counterbore and drill large hole part way

1. Form two front diameters and chamfer head—drill large hole remainder—support

2. Form two rear diameters—ream large hole—face end—support

3. Stop spindle rotation—mill flat—support

As a part of a continuing contribution to all phases of cost reduction, National Acme engineers initiated the development work necessary to effect important savings for this 65 year old Wellsburg, W. Virginia company.

The aluminum nozzle body of their hydraulic pump oilers formerly had been produced on a six spindle automatic and two other machines performing secondary operations. Visionary machine tool engineering made possible the application of spindle stopping and positioning on an eight-spindle Acme-Gridley to complete the entire piece *in the primary set-up . . . and increase net production.*

Advanced design and development such as this, together with wide open tooling zones, independently operated tool slides and the extreme accuracy and flexibility of direct camming . . . makes possible the solution of "unusual" jobs an "every day" occurrence at National Acme.

Write or ask one of our representatives for the complete story on the industry's most modern approach to *your* cost reduction problem.

NATIONAL ACME'S
"ZONE OF RESPONSIBILITY"
INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS...Then Check National Acme

Direct Costs: these include direct dollar savings as realized by the Eagle Manufacturing Company . . . an "every day" job for Acme-Gridleys.

Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

Product Redesign: teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.

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The National Acme Company
189 E. 131st Street
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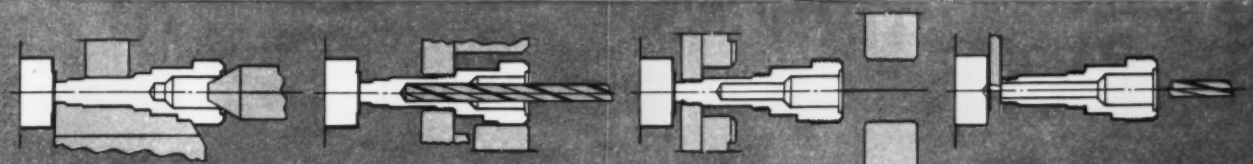
Pioneer in Circumferential Automation

15 Operations in 5.5 Seconds



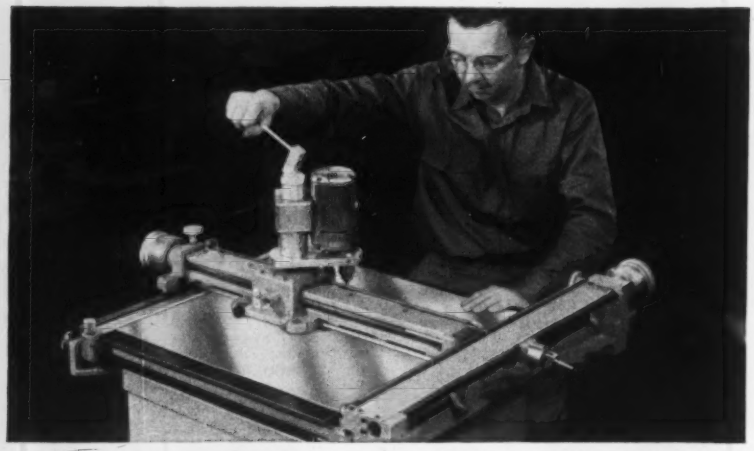
4. Start spindle—shave all over—support

5. Roll center thread—drill small hole part way—support

6. Roll rear thread—thread head

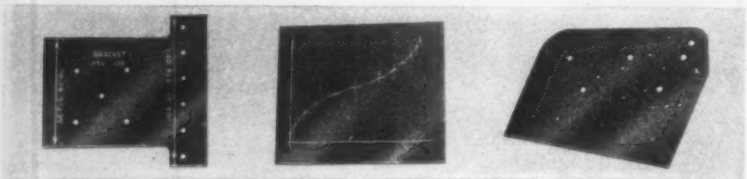
7. Drill small hole remainder—cutoff

layout and
template making time
cut in half . . .



THE NEW **STRIPPIT**
FLEX-O-DRILL

- **DRILLS, REAMS, SCRIBES, CENTER PUNCHES** to ± 0.002" WITHOUT base line drawing or height gauge layout!
- **EASY, ACCURATE POSITIONING**—quickly set to any reference point and to nearest 0.100" by adjustable steel tapes reading in both directions from zero. Micrometric gauges then bring settings to nearest 0.001". No optical scanning device needed.
- **LASTING ACCURACY!** Table is an actual ground surface plate. Bridge assembly is of heavy, accurately machined castings. Lead screws are precision ground and engaged only during micrometric gauge settings to minimize wear. All parts are corrosion-resistant. Bearings are protected against dust and chips by felt shields. Drill motor is heavy-duty industrial type.
- **¼" CAPACITY** in mild steel — stock up to 24" width, any length.
- **ALSO A PROVEN MONEY-SAVER** on pilot runs, low unit production.



Template drilled by Flex-O-Drill | *Layout scribed by Flex-O-Drill* | *Flex-O-Drill work piece*

WRITE FOR LITERATURE TODAY, and an actual demonstration at your plant:

WALES STRIPPIT INC.
210 Buell Road, Akron, New York

UNIT OF HOUDAILLE INDUSTRIES, INC.

In Canada: Strippit Tool & Machine Company, Brampton, Ontario

Vanadium Eyed for Use in Reactors

Purer forms are ductile, have good thermal properties, will not alloy with uranium

VANADIUM IS finding its place in the growing reactive metal group. Some commercial producers are making it. Several applications are promising.

The metal may be used as a fuel element cladding material in nuclear reactors. It is being considered because it has good thermal conductivity and will not alloy with uranium. Good formability and unusual diffusion properties have prompted its consideration (in sheet form) as a diffusion barrier when cladding steel with titanium.

• **Properties** — Pure vanadium is soft, ductile, has a relatively low neutron cross section, and has excellent corrosion resistance. Impurity levels are critical, particularly for oxygen, nitrogen, hydrogen, and carbon. A few hundredths of 1 per cent difference can change it from a ductile to a brittle metal.

Resistance to hydrochloric and sulfuric acid is probably as good as that of any metal. It is said to withstand aerated salt water attack better than most stainless steels but not as well as titanium. Resistance to dilute caustic solutions is fair. It cannot withstand dilute or concentrated nitric acid.

• **Fabrication** — Vanadium of reasonable purity can be hot worked easily, but an oxide forms rapidly above the oxide melting point (1225° F) and requires special handling. Below 1225° F the oxide is tight, adherent, and self-protective. Levels of impurities, particularly oxygen and nitrogen, affect hot or cold workability.

Malleability has been demonstrated by severe cold working. Foil less than 1 mil thick has been rolled without intermediate annealing, and it is expected that wire can be drawn to less than 15 mils in diameter. Wire rod is cold swaged without difficulty.

Welding is practicable, but only

NOW... you can get

TYPE No. 01 (A.I.S.I. or S.A.E. ANALYSIS)

FLAT GROUND DIE STEEL

OIL HARDENING

from SIMONDS

For tool makers, die shops and machinists who prefer or who have standardized on Type No. 01 Oil Hardening Steel, SIMONDS now offers the most complete range of stock sizes in flats and squares made from Simonds own steel of No. 01 chemical analysis.*

Precision ground and ready-to-use, all "1001" sizes are accurate and uniform in dimension and have an extra smooth surface with edges and ends finished and squared. Heat treatment is simple and foolproof, with excellent results assured. Best of all, you can get delivery now of No. 01 Type as well as Air Hardening and Low Carbon Type Flat Ground Steel from Simonds distributors' stocks backed up by Simonds warehouse stocks in Boston, Newark, N. J., Detroit, Chicago, Shreveport, La., Los Angeles, San Francisco and Portland, Oregon.

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For Fast Service from Complete Stocks
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Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y., Heller Tool Co., Newcomerstown, Ohio
Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada
RED STREAK
FLAT GROUND DIE STEEL
(5% CHROME TYPE)
AIR HARDENING
36" x 3" x 3/8
HEAT TREATMENT
36" x 3" x 3/8
SIMONDS
AIR HARDENING
(5% chrome)
Spheroidize Annealed —
Non-Deforming Type
Flat Ground Die Steel
Chemical Analysis
C .95-1.05 Cr 5.00-5.50
Si .30- .50 Mo .90-1.10
Mn .50- .70 V .20- .30
Hardening Range —
1700° to 1800°F.
SIMONDS LOW CARBON
Fine Grained — Silicon Killed
Flat Ground Steel
Typical Analysis
C .18 Si .20
Mn .50 S .04
P .04
Can Be Case Hardened Only
24" x 2 x 1/16
TYPICAL CHEMICAL ANALYSIS
HEAT TREATMENT BY CASE HARDENING ONLY
LOW CARBON
28" x 2 x 5/16
RED STREAK
Flat Ground Steel
A FINE GRAINED, FORGING QUALITY
SILICON KILLED STEEL

*

CHEMICAL ANALYSIS
Spheroidize Annealed —
Non-Deforming
Type No. 01 Oil Hardening
Flat Ground Die Steel

C	.85- .95	Cr	.40-.60
Mn	1.00-1.25	W	.40-.60
Si	.20- .40	V	.10-.20

Hardening Range —
1450° to 1500°F.

Built by
HEVI-DUTY
specialists in
industrial furnaces

CONVENIENT, QUIET, SAFE

The New Hevi-Duty Electric Resistance Holding Furnace

The holding furnace brings a new degree of speed, convenience and safety in the production of aluminum castings . . . and a new high in metal quality, too. There is no turbulence, no noise and a minimum of dross formation. It holds metal overnight, or over a weekend if necessary. The unit is extremely compact and unusually cool to work with.

Further, it is simple to service. Resistance elements can be replaced while furnace is in operation. If charge freezes due to power failure, it can be reheated without damage to furnace. There are no pots to break or replace. Linings last for years under normal conditions and are standard brick shapes — available locally.

Find out how its quiet efficiency can aid your operation. Call your Hevi-Duty representative or write for Bulletin 150.

- Industrial Furnaces electric and fuel
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Milwaukee 1, Wisconsin

by protecting the molten zone from the atmosphere. Heliarc welding and similar methods have been used, but working in an enclosure having an inert atmosphere is the most satisfactory method.

• **Vanadium Alloys**—Comparatively little has been done in the study of alloy combinations. Titanium seems to be the most promising alloying element for improving vanadium base alloy strength, both at room and at elevated temperatures. The strength-to-weight ratio up to 1200° F and good formability are among outstanding qualities studied so far.

Chromium, aluminum, and zirconium show promise as ternary alloying elements. Such alloys might be considered for airframes of high speed aircraft.

Device Records, Controls Carbon Content in Gases

A NEW concept is applied in an automatic carbon potential controller, called the Rolock, announced by Rolock Inc., Fairfield, Conn. It's used with endothermic gas generators serving controlled atmosphere heat treating and carburizing furnaces.

Victor Kappel, president of Connecticut Gas Atmospheres, who designed the compact equipment, says the operating principle could be adapted to control of any combustible gas.

The sensitive device measures and records temperatures at a single point inside a small flame, burning a sample of the gas under constant pressure and with constant volume.

For each carbon potential of the sample gas, there's a corresponding flame temperature to which the Rolock can respond.

Close limits are easy to maintain. In closed control circuit with furnaces or gas generators, constant monitoring and immediate adjustment are assured if the gas generators can hold carbon level within a reasonable range.

It replaces more complicated controllers. A trained technician for operation is not needed if it is properly installed and calibrated with furnace or gas generator conditions.

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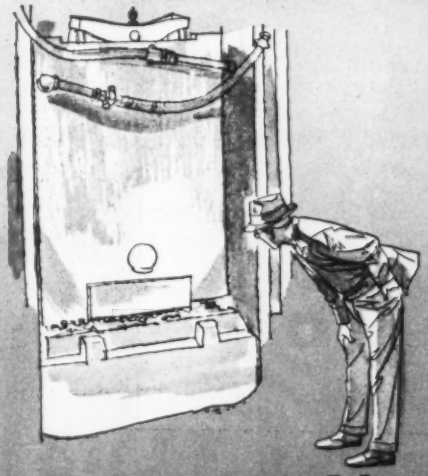
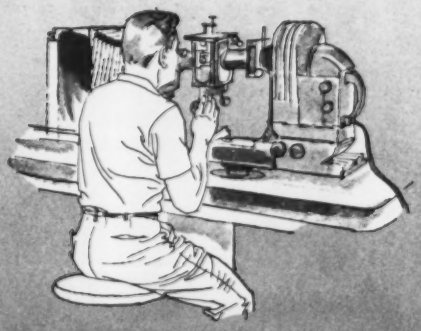
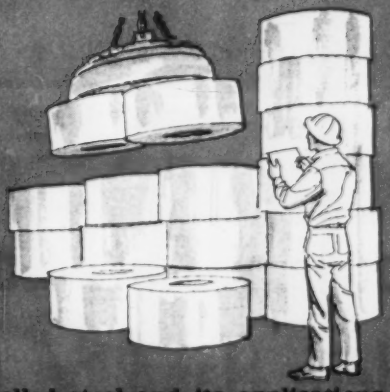
is a SPECIAL service





at Alan Wood



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Empire Steel Casting's new bay for cleaning large castings is fed from the main floor by jib crane. Transfer within the department is by overhead monorail. After chipping and grinding, the conveyors feed the castings back into the main bay

Foundry Cuts Costs with Modern Handling Methods

Sweeping modernization program takes in handling of raw materials; in-process movement of carbon, alloy, and stainless steel castings; metal and molds

LOOKING for ways to reduce production costs? The best place to start is at basic sources of high costs.

One is material handling. It cuts across all metalworking, but is particularly a problem for foundries. One firm, Empire Steel Castings Inc., Reading, Pa., found the answer in complete modernization of its handling methods in all phases of production.

Three objectives were realized:

1. All nonproductive storage and material handling were removed from the foundry.

2. Premium molding facilities (shell and stainless steel) were built into former waste storage space and new building extensions.

3. Handling costs were reduced and production increased.

Management at Empire feels the modernization program will put the company in a more favorable competitive position in the expanding market for premium castings which is expected this year.

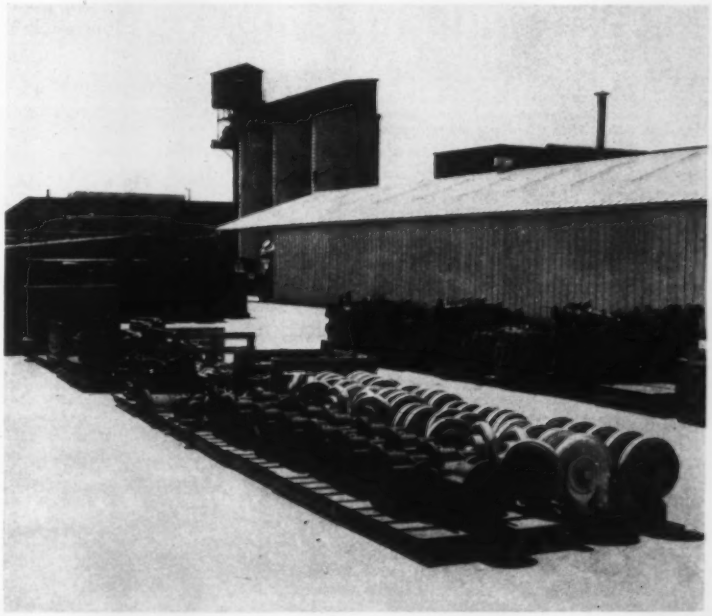
• **Broke a Bottleneck**—The company produces sand and shell molds for small (under 50 lb), medium (50 to 100 lb), and large castings. Much of the work is in small and medium products.

Material flow to and from all stations was the big bottleneck. To break it, the foundry built new molding and pouring departments, conveyorized cleaning lines, took all unnecessary operations and equipment out of the foundry, mechanized supply handling operations, and added more mechanical aids.

Shell molding (in background) and sand molding use the same mold setout tracks. The only hand transportation in the foundry operation: Shell molds are carried a few steps to the top of the setout line

Loading and unloading of the annealing furnace are also mechanized. A fork lift truck picks up the hot casting and lowers it into quenching tanks set in the floor

Empire hardtopped its yard to permit outdoor storage of finished castings, flasks, and raw materials. By adding a crane, the foundry can make up furnace charges outdoors



• **Move Was Necessary** — MacCormick G. Moore Jr., Empire's president, feels his modernization program was necessary merely to stay competitive. "Customers are writing tougher specifications that require more testing and improved controls. To provide superior alloy and stainless steel castings at fair prices, we must make foundrywork easier so each man works more efficiently and productively."

Efficient material handling starts in the purchasing department. All supplies that can be shipped palletized are ordered that way. Everything but scrap and sand is handled by fork lift trucks and stored in the blacktopped yard or in a new warehouse. Flasks and finished castings are palletized and stored in the yard to keep the foundry free and uncluttered.

With the installation of a magnetic crane, furnace charges will

be made up in the yard and moved by truck. Scrap and pig iron are stored in open bins that flank the railroad siding. That minimizes unloading time.

• **Extra Space Gained**—An addition was built on the main foundry bay to gain space. It was used to expand the molding facilities for stainless steel.

A shell molding department was established with hoods over the equipment to remove fumes, and a sand molding area for stainless was set up. Both molding operations use the same dual-rail tracks to feed the molds to the main pouring area.

• **Cleaning Conveyorized** — After pouring and shakeout, the castings go to one of six cleaning lines (three roller conveyors for light castings and three for medium castings). Heavy castings are sent down the main bay by crane. A new auxiliary cleaning line off the main bay is fed and emptied by jib cranes.

Once castings are in the auxiliary bay, they move along on the roller conveyors. Jib cranes are used to move castings to work stations.

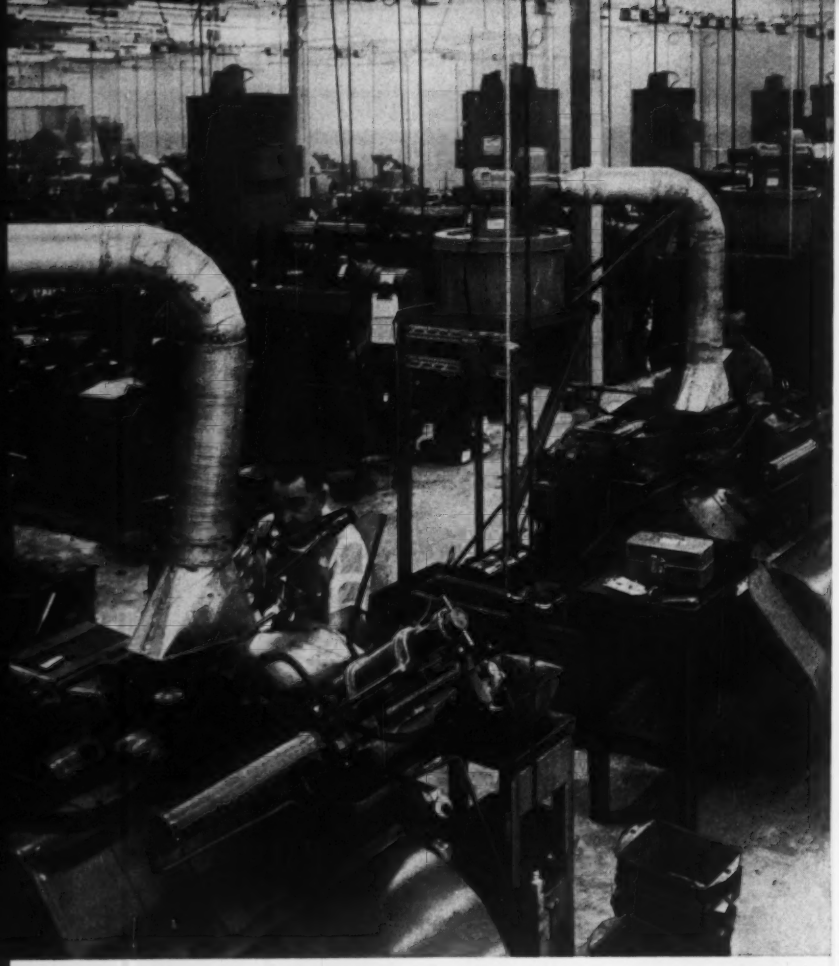
Jib cranes that service all cleaning stations in the main bay eliminate time wasted in waiting for overhead crane service.

• **Truck Handling**—Tote boxes of small and medium castings are moved from shakeout by lift trucks. After tumbling and shotblasting, the castings are again transferred by truck to the cutoff area at the head of the roller conveyors.

Risers and gates are removed by abrasive wheel or torch. Castings are then tossed into carrier boxes on the conveyor. Boxes pass along the main conveyor until diverted to grinding stations, then farther along conveyor lines through chipping and dressing operations.

• **Heat Treatment**—All the lines, roller and main bay, end at the heat treating department. Carbon steel castings are normalized in a gas fired, car type furnace.

A new, high temperature, gas fired car-type furnace just starting operation will expand the heat treating capacity for stainless steel and low alloy castings. Special alloy castings may also be heat treated in two additional gas fired ovens.



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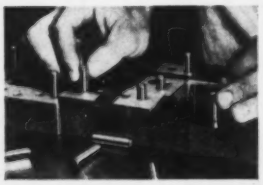
A quarter of a million square feet of space in the great new Allen plant is devoted to precision fasteners – and much of it houses batteries of the latest, high-speed automatic centerless grinding equipment. Here you see a close-up of the grinding section set up to produce dowel pins at the rate of one a second per machine.

Allen's vast new facilities assure constant standards of uniformity, accuracy, strength and fit, many of which are duplicated nowhere else. Now there's more reason than ever to make Allen *your* Buy-Word for socket screws, keys, pipe plugs and dowel pins.

Speaking of dowel pins – specify *Allen* for great strength where you need it most. Made of Allenoy steel, they're surface hardened to 62-64 Rockwell C. Core hardness 47-53. Case depth .010" to .020". Shear strength from 160,000 to 180,000 psi. Precision-ground to ±.0001", with a mirror finish of 6 RMS max.

In stock at your Allen Distributor . . . in dias. from ⅛" thru 1" . . . lengths from ⅜" thru 6". Also in two standard oversizes – .0002" for press fit, .001" for repairs. For more details, ask your local Distributor, or write directly to the Allen Manufacturing Company, Hartford 1, Conn.



ALLEN HEX-SOCKET SCREWS HEAD

Routers Machine Nonferrous Metals at High Speed

YOU CAN machine aluminum, magnesium, and other nonferrous metals at high speed with the Models 1024 and 1036 heavy duty routers. Features of the machines include modern design, easier tooling and setup, simplified operation, extra strength, and lower maintenance costs.

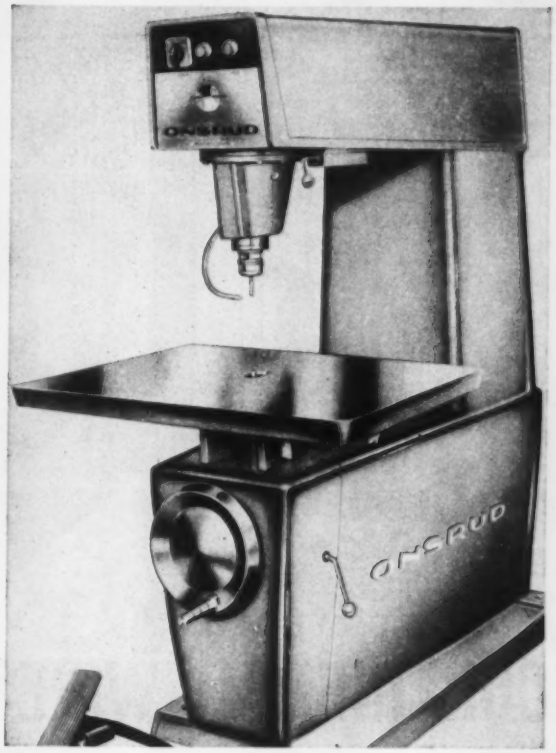
The entire machine stand (bed, column, and overarm) is a one-piece Meehanite casting. Its massiveness and rigidity assure maximum routing accuracy. Control of the machine is centered in a pushbutton station on the front with a selector switch for operation at 10,000 or 20,000 rpm spindle speed. The drive motor and an electric spindle brake for quick stopping are coupled to the stop button.

A new, large size table provides ample room for setup and work feed. Tables are adjustable for vertical height positioning. An optional table design provides tilt up to 45 degrees.

A foot control lowers or raises the router head for vertical feed to the work. Air pressure for actuating feed is controlled by a pedal.

Other design details include a spindle lock for easy mounting of arbors and chucks, an air nozzle to keep the work free of chips, and a vacuum pulley drive to give positive transmission of drive motor power and speed to spindle.

For more information, *write* Machine Tool Div., Onsrud Machine Works Inc., 7720 Lehigh Ave., Niles 48, Ill.



Universal Milling Machine Adjusts in Three Planes

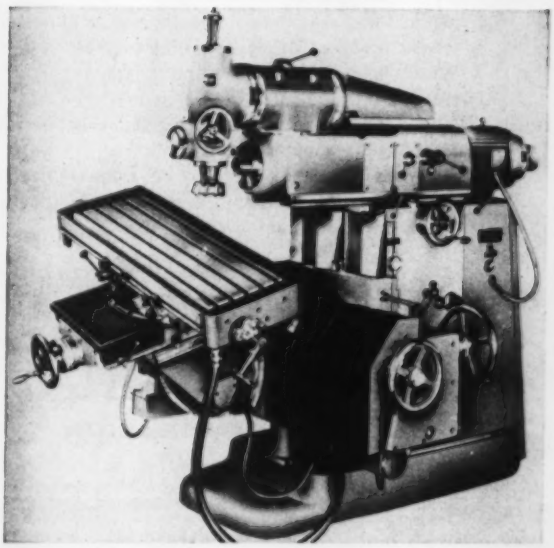
BECAUSE of its versatility in worktable plane adjustments, sensitive range of cutter speeds, and fast tooling setup, the Model UF-2 milling machine is ideal for shopwork on die cavities or machine components.

An earlier model has become invaluable to a large eastern aircraftmaker. Ease of conversion from slotting to horizontal or vertical milling has saved time and money in one-of-a-kind machining operations.

Special features of the unit: Its 36 spindle speeds ranging from 33 to 2170 rpm; nine feeds spaced from 15/32 in. up to 10 in. per minute with a fine boring feed adjustable down to 0.0002 in. per revolution; rapid traverse for the horizontal milling head and for the vertical and longitudinal table motions.

The 42½ x 15¾ in. worktable can carry a workpiece weighing up to 2000 lb if the piece is kept close to the column. Work up to 1400 lb can be accommodated in the extreme overhanging position without distorting or overloading the machine.

For more information, *write* Carl Hirschmann Co. Inc., 30 Park Ave., Manhasset, N. Y.



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EXAMPLE

FIREPLACE CURTAIN SCREEN WIRE

The beauty and smooth operation of fireplace curtain screens depend on accurate forming, even spacing, and neat appearance of the mesh. The wire used must be of correct temper, diameter and finish. Uniformity of these properties is of prime importance. Leading fireplace equipment makers choose Continental Wire because it possesses these features dependably, in coil after coil. The ability to take intricate forming is an important reason why Continental Wire is specified for scores and scores of other products made with wire. Continental Curtain Screen wire, 19 gauge through 20 gauge inclusive in size, is available in 500 pound to 650 pound catchweight single length coils packed in Leverpac Drums for faster weaving with less down time, cleaner handling and better storage. For wire in practically any size, finish, temper or analysis, in low or medium low carbon steels, see Continental first!

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NEW PRODUCTS and equipment

Brush Plating Outfit Does Variety of Jobs

YOU CAN try out brush plating for a variety of work in your shop with this pilot plant kit. Suggested uses: Research and development, prototype work, and applications requiring portability of plating equipment.

The kit consists of a power pack, a dozen assorted working tools, replaceable anodes, cleaning and preparatory solutions, three plating solutions (cadmium, copper, and nickel), and accessory items for use with the Dalic process.

For more information, *write* Marlane Development Co. Inc., 153 E. 26th St., New York 10, N. Y.

Band Sawing Machines Have Extended Tables

TO FACILITATE large, awkward band machining operations, DoAll Co. is offering an extended-table model in each of its lines of vertical band machines.

Designated by the suffix HB, the machines have an effective working stroke of 41 in., and will move a 1-ton workpiece at any feed rate from 1.5 to 96 ipm.

All of the HB model units incorporate a new feature: The saw band can be changed without disturbing the setup. The total travel of the table is 9 in. more than its effective working travel. At anytime during a cut, the table may be withdrawn to its extreme position. This uncovers a gap in the table bed that allows easy access to the

quality

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Penola

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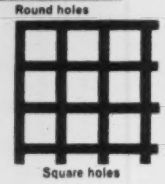
put personality into your products

Round holes

Whenever—wherever—your products require perforated materials, you will find the pattern and open area "just right" for that custom-look in the vast selection of H & K existing dies.

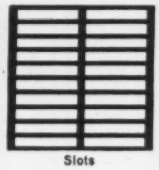
Modern facilities and H & K experienced craftsmanship, enable the perforating of practically all metals, wood, compositions and plastic. Perforated materials can be furnished in sheets, coils, rolls or plates. Fabricating services include shearing, rolling, welding and forming.

Illustrations shown in reduced size

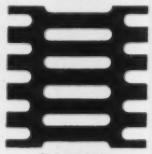


Square holes

Herringbones



Slots



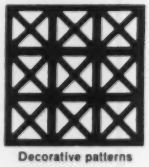
Oblong holes

Functional or Decorative Uses

H & K fills every need for perforated materials. Appropriate perforated metals can be ordered with color anodized, brushed and lacquered, painted, chrome plated, baked-on, or other special finishes.

Many patterns in steel sheets (industrial or decorative) are in stock at our warehouses. Send for H & K Stock List Brochure.

Write for General Catalog No. 75, Today!



Decorative patterns

THE Harrington & King PERFORATING CO. INC.

Chicago Office and Warehouse • *New York Office and Warehouse*

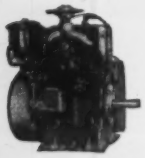
5627 Fillmore Street, Chicago 44, Illinois

118 Liberty Street, New York, New York

FIND NEAREST H&K AGENT in the 'Yellow Pages'

Listed Under "Perforated Metals"

2-cylinder models 10 to 18 hp.



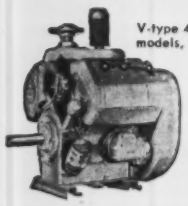
4-cycle single cyl. models, 3 to 9 hp.

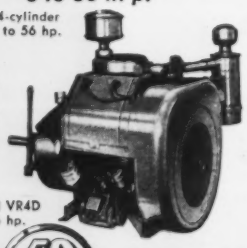
Torque Champs

WISCONSIN ENGINES

3 to 56 h. p.

V-type 4-cylinder models, to 56 hp.





New Model VR4D 43 to 56 hp.

• *Load-Holding Lugging Power!* That's what you get when you specify Wisconsin Heavy-Duty Air-Cooled Engines... engineered for HIGH TORQUE performance. Here is power that *hangs* on through the shock loads . . . and *carries on* under either variable or constant-load operating conditions.

Wisconsin basic HIGH TORQUE design pays off in terms of "Most hp. Hours" of on-the-job heavy-duty service, at all temperatures from low sub-zero to 140° F. Team-up your equipment with Wisconsin HIGH TORQUE Champs—backed by over 2,000 Wisconsin Authorized Service Stations, world-wide. Write for full-line "Spec" Bulletin S-237

50 YEARS OF WISCONSIN ENGINEERED PROFITS 1900-1950

WISCONSIN MOTOR CORPORATION Milwaukee 46, Wisconsin

World's largest builders of Heavy-Duty Air-Cooled Engines

NEW PRODUCTS and equipment

lower carrier wheel for band removal and replacement.

For more information, *write* DoAll Co., Des Plaines, Ill.

Saw Cuts Hard Metals

POWERED by a 7½ hp continuous duty motor, this cutoff saw handles the hardest metal with high speed and accuracy.

It cuts ferrous and nonferrous metals at a rate of 2 to 4 seconds per square inch to tolerances of less than 0.010 in. leaving a milledlike

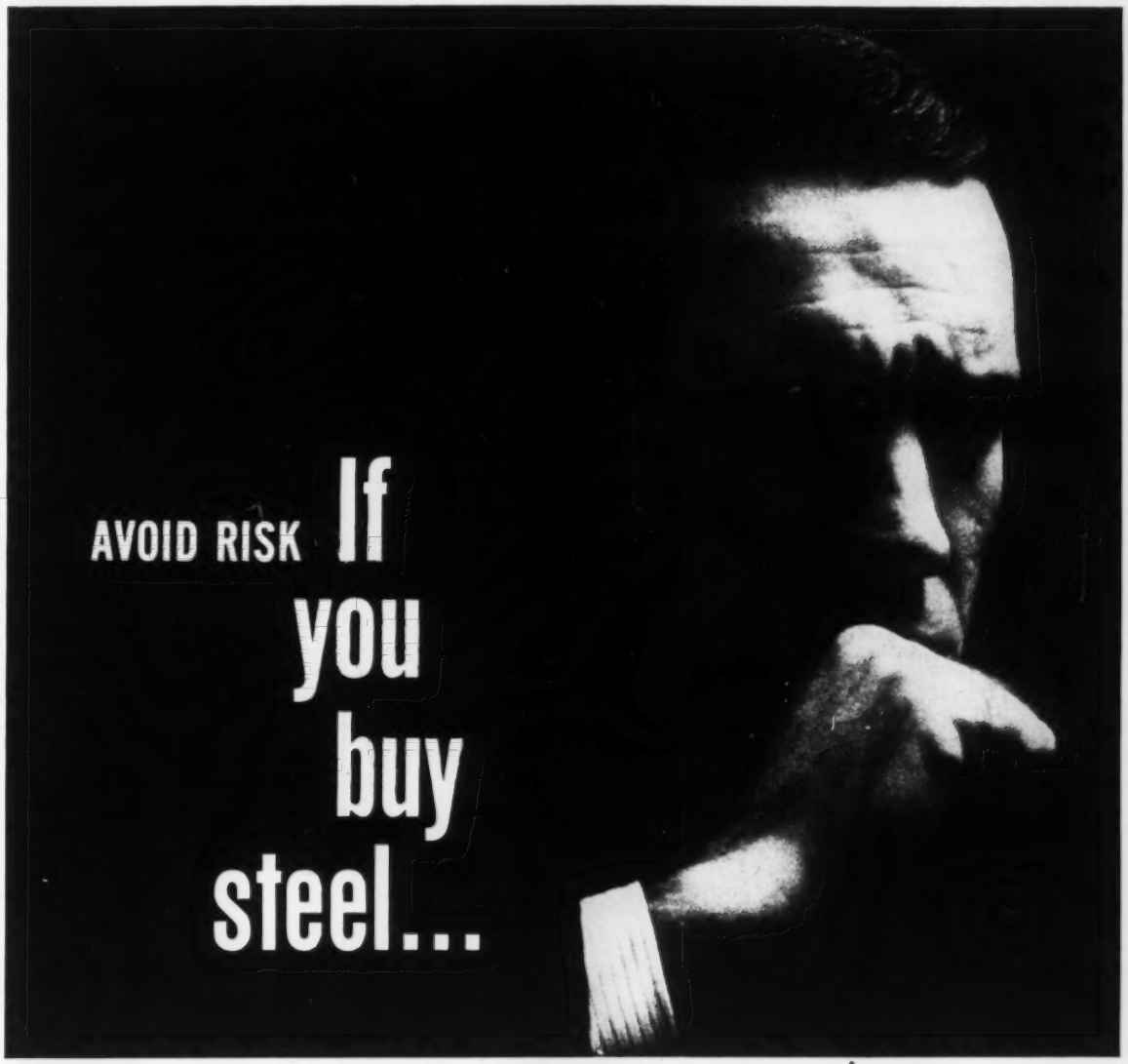
finish that often eliminates subsequent operations. It produces no change in characteristics or hardening of metals.

The Model M-750, is available for manual, semiautomatic, and automatic operations. For more information, *write* Stone Machinery Co. Inc., Manlius, N. Y.

Coil Receiver Doubles Slitting Line Capacity

INTERRUPTIONS for banding in slitting operations are eliminated with this coil receiver. Instead of banding coils on the slitter reel, coils are pushed on to the hydraulically operated coil receiver, then

(*Please turn to Page* 151)



USE OUR CAPITAL to cut your inventory costs

You save money when you use the steel inventory of your Steel Service Center. Cutting down your steel stocks frees your capital for more profitable use . . . ties up less working capital. That's good business.

You can save space, and the cost of that space by using our inventories as your own. You seldom suffer obsolescence losses. You avoid inventory problems created by too-ambitious forecasts.

We deliver your steel when you want it, cut to exact size, and ready for your use. Whatever your steel need, there's a nearby Steel Service Center set up to serve you quickly from stock.

If you're putting steel in inventory because you think it's a bargain, compare *all* of your *costs of possession* with the cost and *freedom-from-risk* of buying steel from your Steel Service Center.

Or, to be more precise, get the booklet *What's Your Real Cost of Possession for Steel* from your convenient Steel Service Center. American Steel Warehouse Association, Inc., 540 Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	
Cost of capital:	
Inventory	
Space	
Equipment	
Cost of operation:	
Space	
Materials handling	
Cutting & burning	
Scrap & wastage	
Obsolescence	
Insurance	
Taxes	
TOTAL	

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

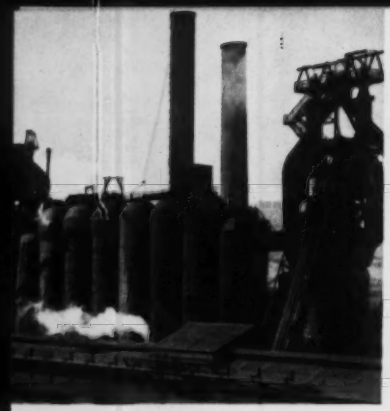
Per ton, cut-to-size, and delivered

TOTAL

AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

...YOUR STEEL SERVICE CENTER

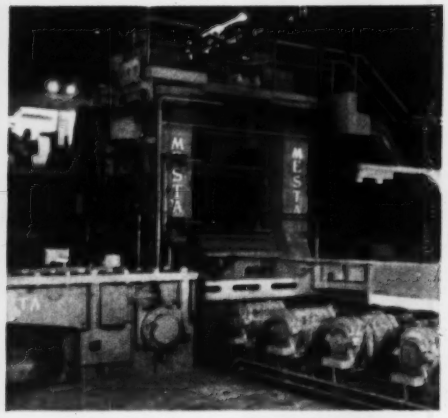


New 400,000-ton capacity blast furnace

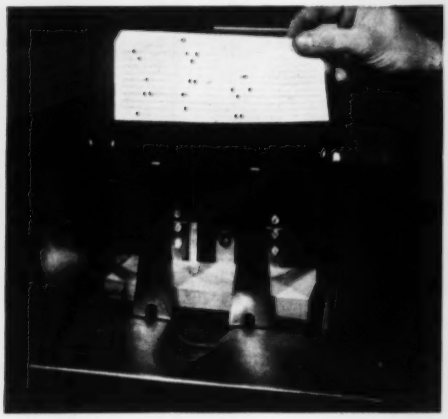
New $11 million basic oxygen furnace facility

New $74 million, 11-furnace open hearth shop

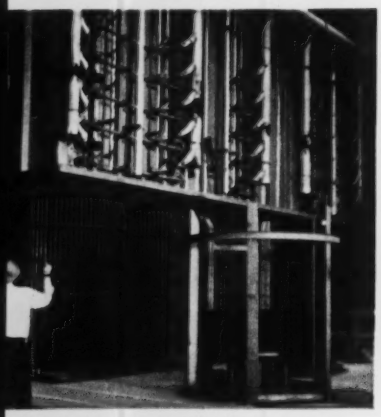
New horizontal scale breaker



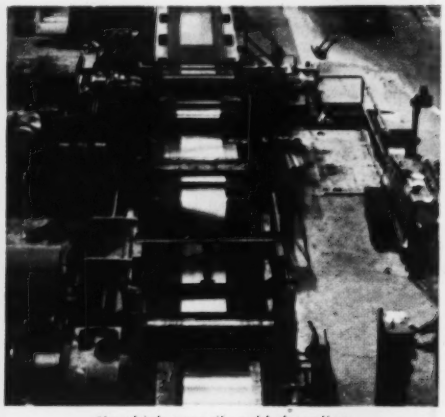
New $12 million reversing roughing mill



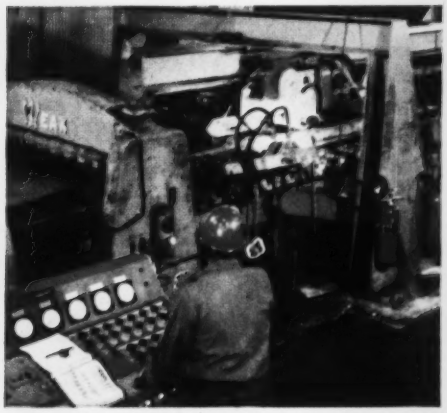
New punch-card controls for quality control



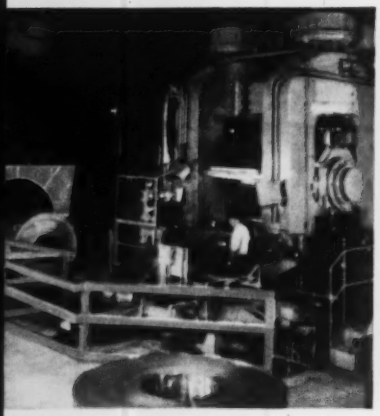
Twenty-five new annealing furnaces



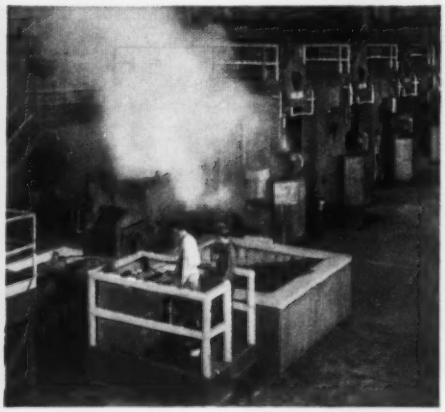
New high-capacity cold shear line



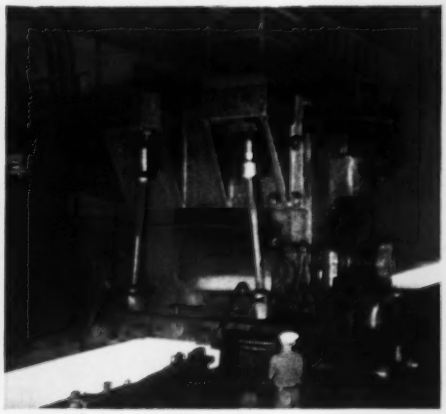
New ⅜-inch high-speed hot shear line



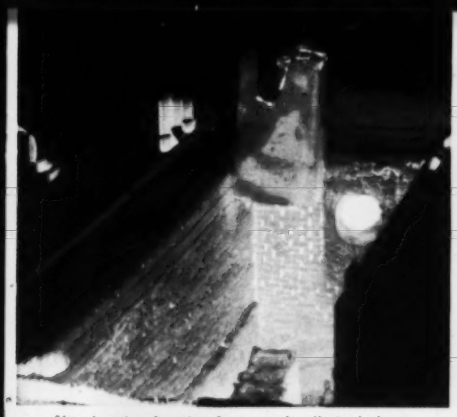
New 56-inch precision temper mill



New $36 million, 44-inch hot strip mill



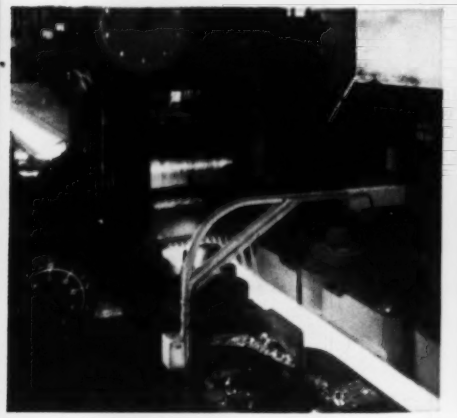
Improved 96-inch hot strip mill



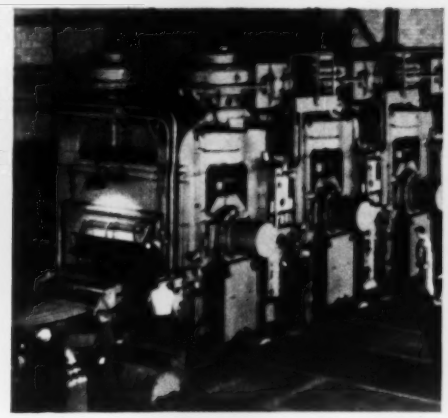
New ingot re-heating furnaces in all steel plants

New $17 million, 68-inch blooming mill

New automatic oxygen scarfer



Vertical edgers to assure accurate coil width



World's fastest cold reducing mill of its kind

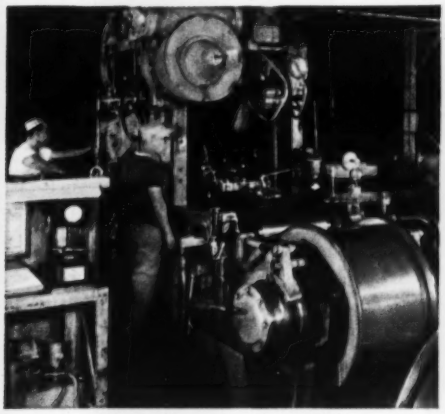
New pickling line handles 60,000-lb. coils

J&L

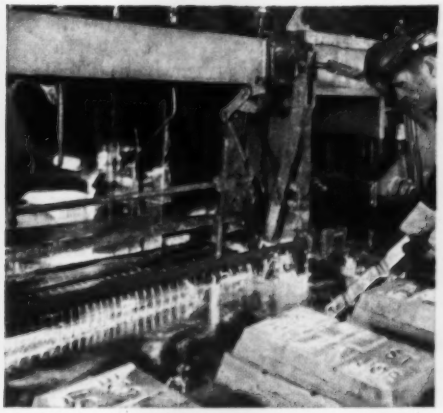
There is a new J&L, which has invested nearly 800 million dollars in new and improved facilities . . . more than twice the company's total value at the end of World War II. This gives us greatly-expanded production capacity, and enables us to be a steady, dependable source of supply for carbon and stainless sheet and strip, and many other products, to present customers and customers we never served before.

Jones & Laughlin Steel Corporation

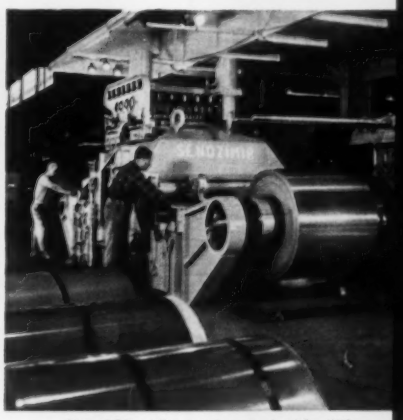
PITTSBURGH, PENNSYLVANIA



Strip steel, a new product for J&L



New $6¼ million Sendzimir galvanizing line



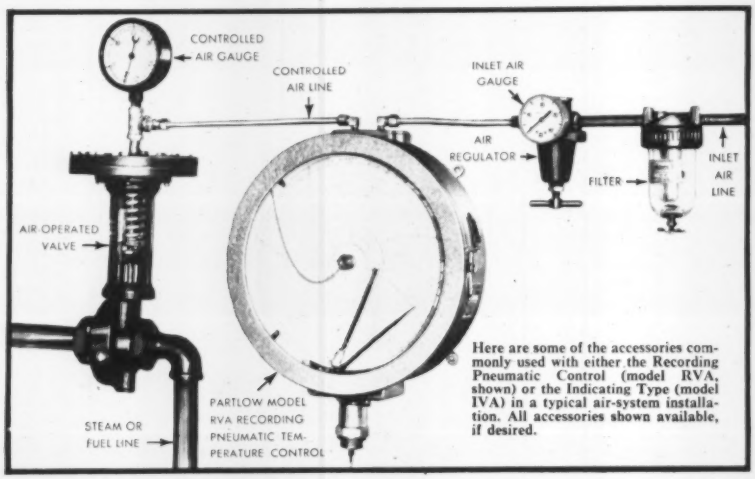
New $62 million stainless steel facilities

Introducing . . .

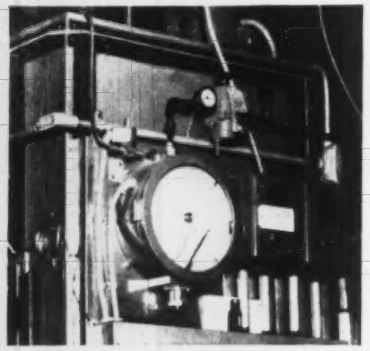
the NEW Partlow Pneumatic Control

New from Partlow . . . throttling-type pneumatic controls engineered to function with extreme accuracy, and sensitivity, under virtually *any* operating conditions.

Actuated as they are by the powerful, direct action of mercury, the Partlow pneumatics actually contain *fewer parts than any other pneumatic control on the market* . . . one reason why they're . . . . **Simpler to install • Simpler to maintain • Simpler to operate • Simpler to replace • and longer lasting, too.**



Here are some of the accessories commonly used with either the Recording Pneumatic Control (model RVA, shown) or the Indicating Type (model IVA) in a typical air-system installation. All accessories shown available, if desired.



MODEL RVA

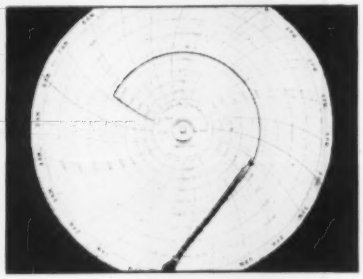
Pneumatic Recording control, installed on new steam-heated cross-flow dryer built by Lydon Bros., Hackensack, N. J.

OUTSTANDING FOR ACCURACY, SENSITIVITY AND FLEXIBILITY

The new Partlow pneumatic controls are accurate to within 1% of scale in any one of 10 ranges from -30° to 1100°F. *Exceptionally sensitive too* . . . providing positive, hair-trigger response even to fractional changes in temperature. *And flexible* . . . with throttling range adjustable anywhere from 3 to 20% of scale range.

COST LESS TO OWN AND OPERATE . . CUT "DOWN TIME" TO A MINIMUM!

Because they contain fewer parts, Partlow pneumatic controls cost less to buy: next to nothing to operate and maintain. *All elements of the same range are interchangeable*, which means they can be replaced right on the job instead of back in the factory . . .'Down time' is reduced to a matter of minutes. And no expensive inventory of spare parts or spare instruments is ever required.



INSTANT RESPONSE

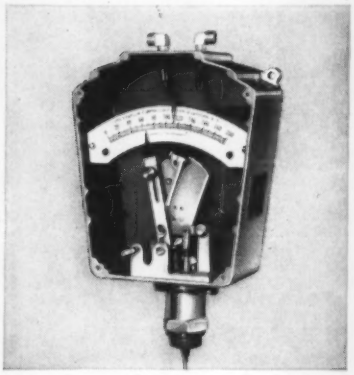
to temperature changes is a key feature of the Partlow pneumatic. Built-in bulb sensitivity teamed with advanced mechanism design means a minimum of saw-toothing on start-up and a fine line of control when the instrument has reached its throttling equilibrium.

IDEAL FOR HAZARDOUS OR 'SHOCK' LOCATIONS!

There are no delicate electronic tubes or gadgets in the Partlow pneumatic to get out of kilter, or possibly trigger an explosion. Its ruggedly simple internal mechanism is virtually shock-and vibration-proof . . provides maximum resistance to moisture, fumes, acid and all types of corrosion. Long-life and trouble-free performance are hallmarks of the pneumatics, as they are of all Partlow controls.

EXCEPTIONALLY VERSATILE TOO!

Both pneumatics — the Recording and the Indicating models — can be used in systems regulating the flow of steam, water or gas . . . or controlling other air-operated devices. Whatever the nature of the heating appliance it actuates, the chances are there's a Partlow pneumatic control to fit your requirements dependably . . . economically . . . *precisely*.



MODEL IVA (interior view)

New Partlow Pneumatic Indicating Control, with throttling range adjustable from 3 to 20%.

SEND US YOUR SPECIFICATIONS

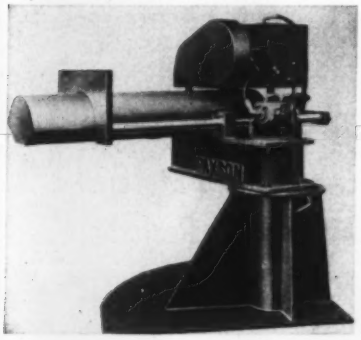
Ask today for a control recommendation tailored for your specific requirements. Of course, if desired, you may field-test this superb new control without cost or obligation. For details write, wire or phone Dept. S-359. The Partlow Corp., New Hartford, N. Y.

Export: Ad. Auriema, Inc., 85 Broad St., New York 4, N. Y.

You can pay more but you can't buy better than

PARTLOW

TEMPERATURE CONTROLS



swung out of the way while the operator slits another coil.

When banded, the coils can be pushed off the coil receiver one at a time or all at once. The unit is available in sizes designed to accommodate the strip from any plant's recoiler.

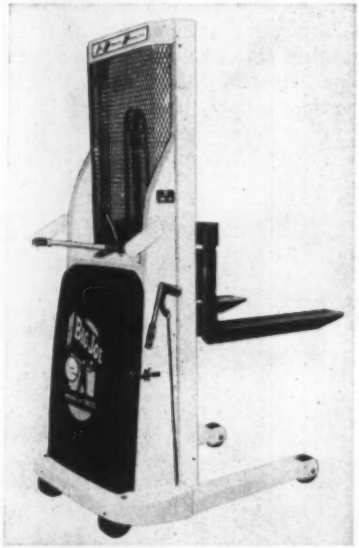
For more information, *write* Paxson Machine Co., Salem, Ohio.

Truck Handles Small Loads

BIG JOE Model 299 lift truck is built for in-between handling jobs. It will lift 1000 lb loads to 57 in.

Large companies can assign the truck to individual departments to provide immediate handling throughout the plant. Smaller industries can save on labor and improve production through the use of the unit.

The truck is equipped with a 12-



PETERSON STEELS, INC.

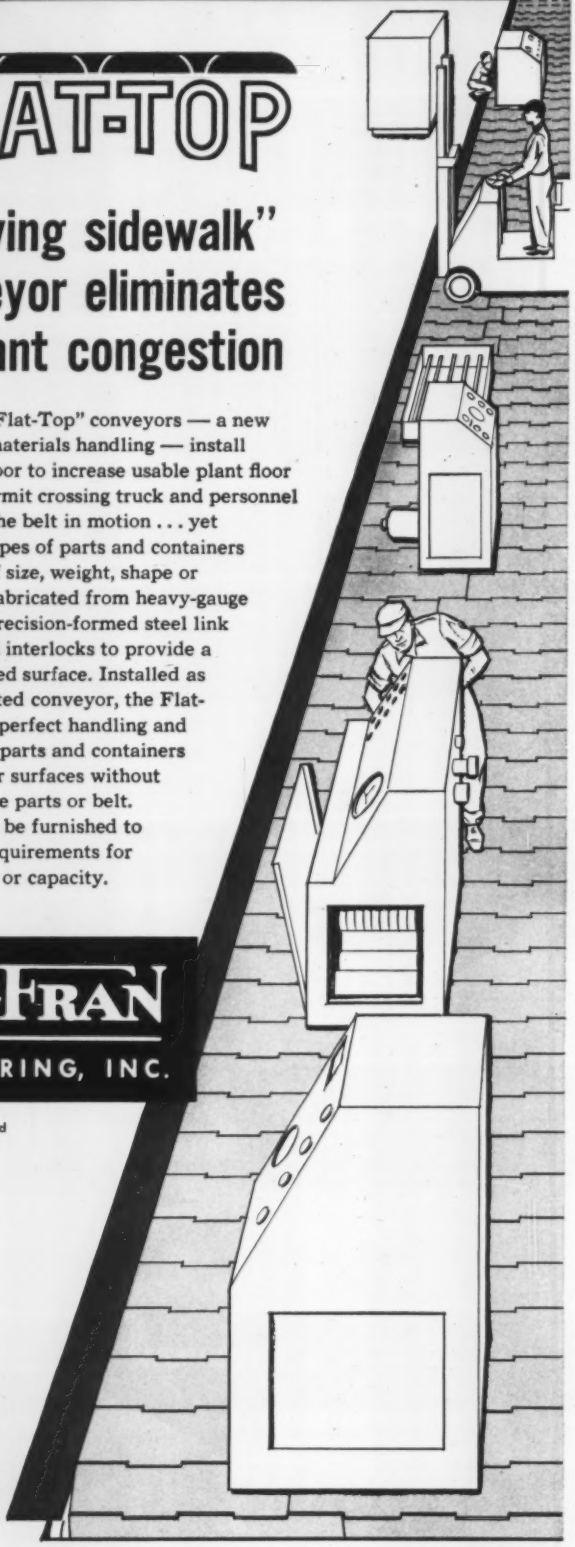
Union, New Jersey • Detroit, Michigan • Chicago, Illinois

MAY-FRAN DOES IT AGAIN!

FLAT-TOP

"moving sidewalk" conveyor eliminates plant congestion

May-Fran "Flat-Top" conveyors — a new concept in materials handling — install flush-with-floor to increase usable plant floor space . . . permit crossing truck and personnel traffic with the belt in motion . . . yet handle all types of parts and containers regardless of size, weight, shape or condition! Fabricated from heavy-gauge steel, each precision-formed steel link overlaps and interlocks to provide a smooth, sealed surface. Installed as a floor-mounted conveyor, the Flat-Top permits perfect handling and deflection of parts and containers with irregular surfaces without damage to the parts or belt. Flat-Top can be furnished to meet your requirements for width, length or capacity.



MAY-FRAN ENGINEERING, INC.

1725 Clarkstone Road
Cleveland 12, Ohio

SEND TODAY
FOR CATALOG MF-100

8322-MF

NEW PRODUCTS and equipment

volt industrial battery and self-contained battery charger.

For more information, *write* Big Joe Mfg. Co., Wisconsin Dells, Wis.

Hard Facing Material Adds Wear Resistance

HARD FACING with sprayed tungsten carbide at 90 per cent deposit efficiency is possible with a spray-powder material.

Carbide concentration in the coating is high. Coatings are torch fused after spraying. The close control of coating thickness plus the comparatively smooth surface minimizes finishing.

The process is recommended for parts subject to extreme wear conditions, such as buffing fixtures, sanding templates, polishing masks, tool joints, and metal patterns.

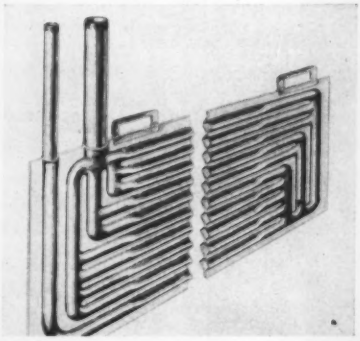
For more information, *write* Metallizing Engineering Co. Inc., Westbury, N. Y.

Heat Transfer Units Offer Better Media Distribution

FAST heat-up of plating tanks, process tanks, and similar applications is possible with the Multi-Zone Platecoil units. A unique arrangement of headers and passes speeds the job.

Better distribution of the steam (or other heating media) is achieved through the use of three headers (branches of the main feed line entering the unit). The headers supply steam directly to a bank of horizontal passes.

The Platecoil unit consists of two



ONE SOLVENT — TWO JOBS

Now you can use one grade of trichlor for both...Nialk trichlor with **psp**

Now you take trichlor for missile flushing and vapor degreasing out of the same drum.

The *metal degreasing* grade of Nialk® trichlorethylene meets industrial specs for flushing missile and rocket components. Its residue count is a low 0.0005%. It meets impact sensitivity requirements.

Save storage space. You can cut inventory to the bone with this single grade of trichlor. The savings in time and money are obvious.

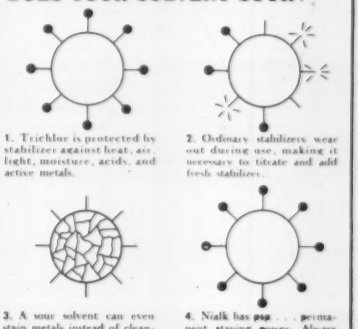
Eliminate mistakes. There's no chance of picking the wrong drum to do a job when you stock just one grade for all work.

No disposal problems. Take the same trichlor you use for flushing and you can use it in your vapor degreaser without distilling.

Get psp too. Get the extra advantages of **psp**—**p**ermanent **s**taying **p**ower—in your trichlor. See box at right for details.

Send for bulletin. Data Sheet 814 should answer any questions you have about Nialk trichlor. Write for a copy.

DOES YOUR SOLVENT SOUR?



1. Trichlor is protected by stabilizer against heat, air, light, moisture, acids, and active metals.

2. Ordinary stabilizers wear out during use, making it necessary to titrate and add fresh stabilizer.

3. A sour solvent can even stain metals instead of cleaning them; affects bath operation, too.

4. Nialk has **psp** . . . permanent staying power. Always gives you full protection. Never goes sour.

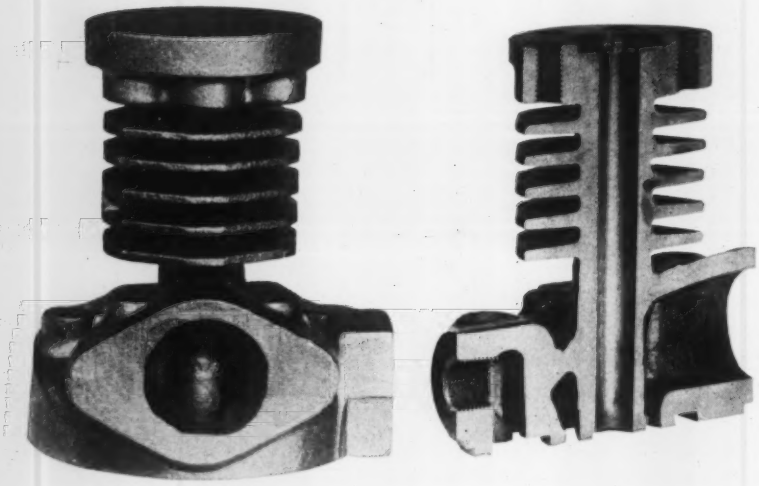
HOOKER CHEMICAL CORPORATION

1203 UNION STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Detroit Los Angeles New York Niagara Falls Philadelphia Tacoma Worcester, Mass.

In Canada: Hooker Chemicals Limited, North Vancouver, B. C.

HOOKER CHEMICALS PLASTICS



HIGH PRESSURE LOW COST

This 8 pound Meehanite Metal casting made for the Joy Manufacturing Co. by Hamilton Foundry is a fourth stage air compressor cylinder. Pressures build up to 6,000 p.s.i. and require a high strength, pressure tight and wear resisting casting. Alloyed Meehanite®, oil quenched and tempered, raised Brinell hardness of the cylinder wall to 275-300, and increased tensile strength to 60,000 p.s.i. Meehanite was chosen for this casting because controlled structure and small uniform flake graphite produce pressure tight castings of uniform density and strength.

Manufacturing costs drop when uniform, high quality castings go through production. In this case, Meehanite castings from Hamilton Foundry give Joy tight control on finished parts costs by combining dimensional accuracy, uniform machinability, a low rejection rate, and delivery on schedule. Pressure tightness, long service life and fine surface finish insure Joy's reputation for product quality.

When new and unusual design problems arise in the selection of metal and the casting of parts, you will find that the skill and integrity of your foundry is your best insurance that specifications—and delivery schedules—will be met.

GRAY IRON • ALLOYED IRON • MEEHANITE® • DUCTILE (NODULAR) IRON • NI-RESIST • DUCTILE NI-RESIST • NI-HARD

HAMILTON FOUNDRY

The Hamilton Foundry & Machine Co., 1551 Lincoln Ave., Hamilton, Ohio • TW 5-7491

embossed metal sheets that are spot-welded to form channels for the passage of heating media. They are available in mild steel, stainless, Carpenter 20, Monel, Hastelloy B and C, and nickel.

For more information, *write* Platecoil Div., Tranter Mfg. Inc., Lansing, Mich.

Flame Detecting Unit Uses Ultraviolet Tube

THIS detection device can be used on all types of industrial heating or processing burners. Since it is sensitive to ultraviolet light, it works equally well with all fuels, including gas-oil combinations.

A self-contained system, the unit has an ultraviolet-sensitive tube that works with an amplifier circuit. It is not affected by hot refractories, incandescent light, hot metal parts, or flickering radiation in the visible or infrared regions.

The manufacturer says the device makes some detection applications possible for the first time, such as exothermic gas generators, radiant cup burners, and flame hardening machines. It can be used to sight temperatures up to 2200° F without any back light effect.

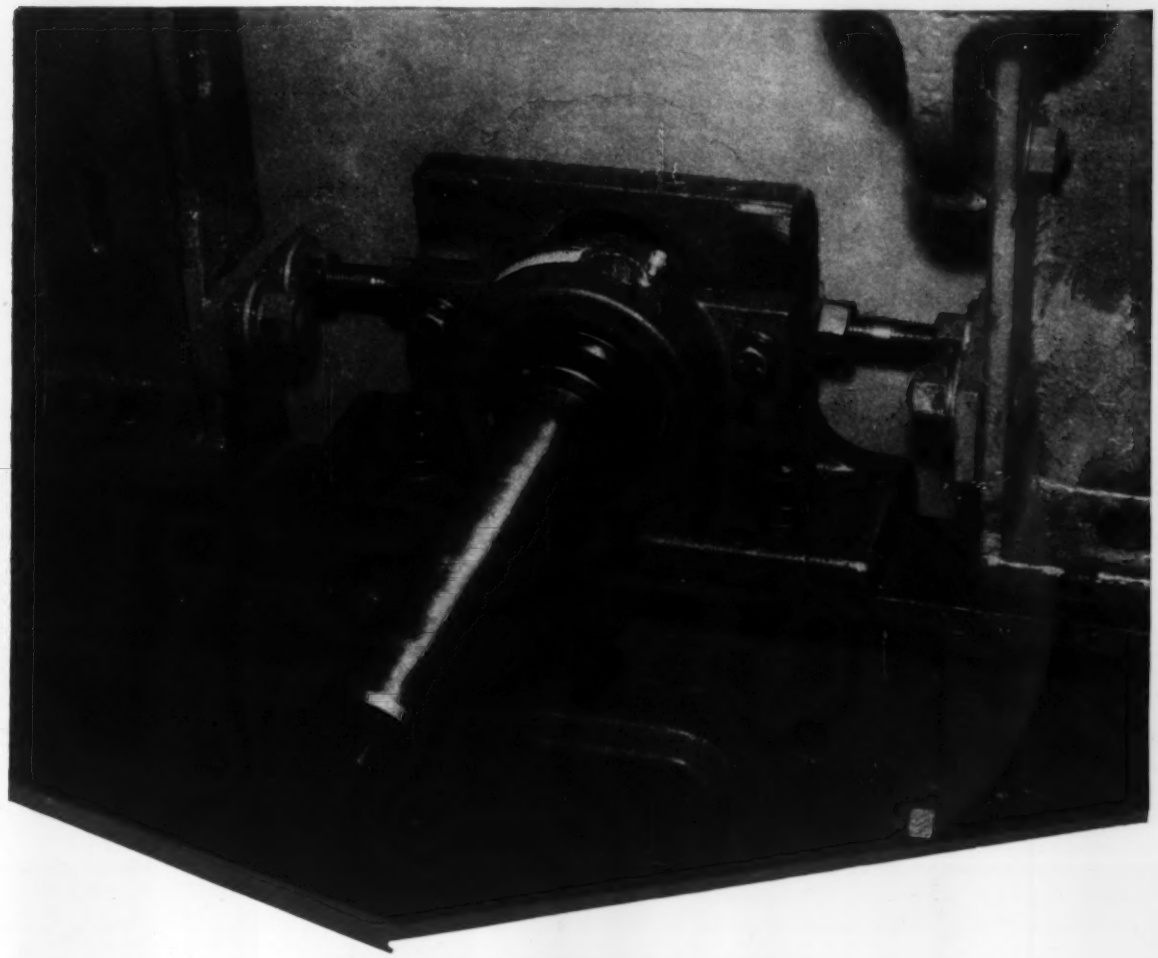
For more information, *write* Merchandising Dept., Minneapolis-Honeywell Regulator Co., 2747 Fourth Ave. S., Minneapolis 8, Minn.

Pneumatic Power Unit Does Milling, Drilling

TWO basic air motors can be used in these pneumatic power and feed units to do reaming, tapping, boring, facing, milling, and drilling.

The feed unit contains its own air motor with adjustable speed control. Automatic stop and return features are built in. The feed unit can be started by a small lever on the right of the machine, or by remote control. By connecting a three-way air valve to the housing, you can provide simultaneous operation for any number of units.

The line provides a range of speed



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designs and supplies anti-friction bearing conversion units for many applications

This sliding, take-up unit is installed on textile mill equipment. It illustrates one of many clean, practical fixtures our bearing engineers have designed to hold the bearings best suited to carry shafts with a minimum of maintenance and with low power consumption. Our customer is pleased with the success of this installation in cutting operating costs, improving quality and increasing production.

Your request for a Bearings, Inc. engineer to survey your machinery and recommend anti-friction bearing conversions where practical, will be promptly answered. It's a service we're glad to perform at no cost to you.

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WEST VIRGINIA: Charleston • Huntington • Parkersburg • Wheeling • **NEW JERSEY:** Camden
NEW YORK: Buffalo, Balanrol Corp. • **MARYLAND:** Baltimore • **DELAWARE:** Wilmington

and in the South → **DIXIE BEARINGS, INC.**

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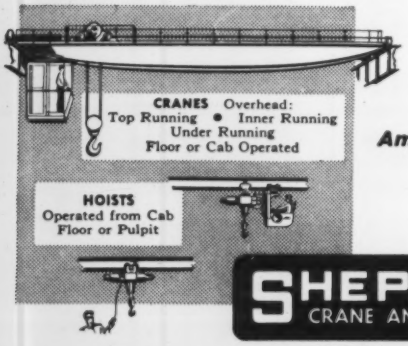
. . . for production and storage

Why move materials around men, materials and machines? Use the direct route — smoothly and safely — through air. Shepard Niles Monorail Hoists and Transfer Cranes put load handling overhead . . . eliminate costly ground level handling. Use the space saved for production and storage.

Rugged Shepard Niles hoists are available for constant or intermittent service. Choose from light, medium or heavy duty hoists equipped with cab or floor controls. Offered in fast, medium or slow speeds. Send for Monorail Hoist bulletin today . . . or ask that a Shepard Niles representative call — there's NO OBLIGATION.



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and torque from 20,000 rpm at 12 lb to 200 rpm at 1440 lb. For more information, *write* Automation Tools Inc., Box 331, La Jolla, Calif.

Universal Speed Reducers

YOU CAN mount these universal, worm gear, speed reducers in three different positions: Wormshaft below the gear, wormshaft above the gear, and with outputshaft vertical.

Cost of horsepower has been reduced by using a one-piece cast iron housing with external fins for cooling and an aluminum radial fan which directs air over the fins.

For more information, *write* Dept. PR, Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

Volatilizing Flux Eases Brazing Problems

HARD-TO-BRAZE materials, such as A 286, 17-7 PH, and Inconel X, can be brazed in hydrogen or dissociated ammonia with Vapo-Flux.

It volatilizes during brazing, leaving no residue. It aids wetting and flow of the brazing alloy. Special surface preparation, such as leaching, etching, or plating, can be eliminated.

It comes as a powder for mixing with powdered brazing alloy and Nicrobraze Cement, or in solution for coating surfaces before applying the brazing alloy.

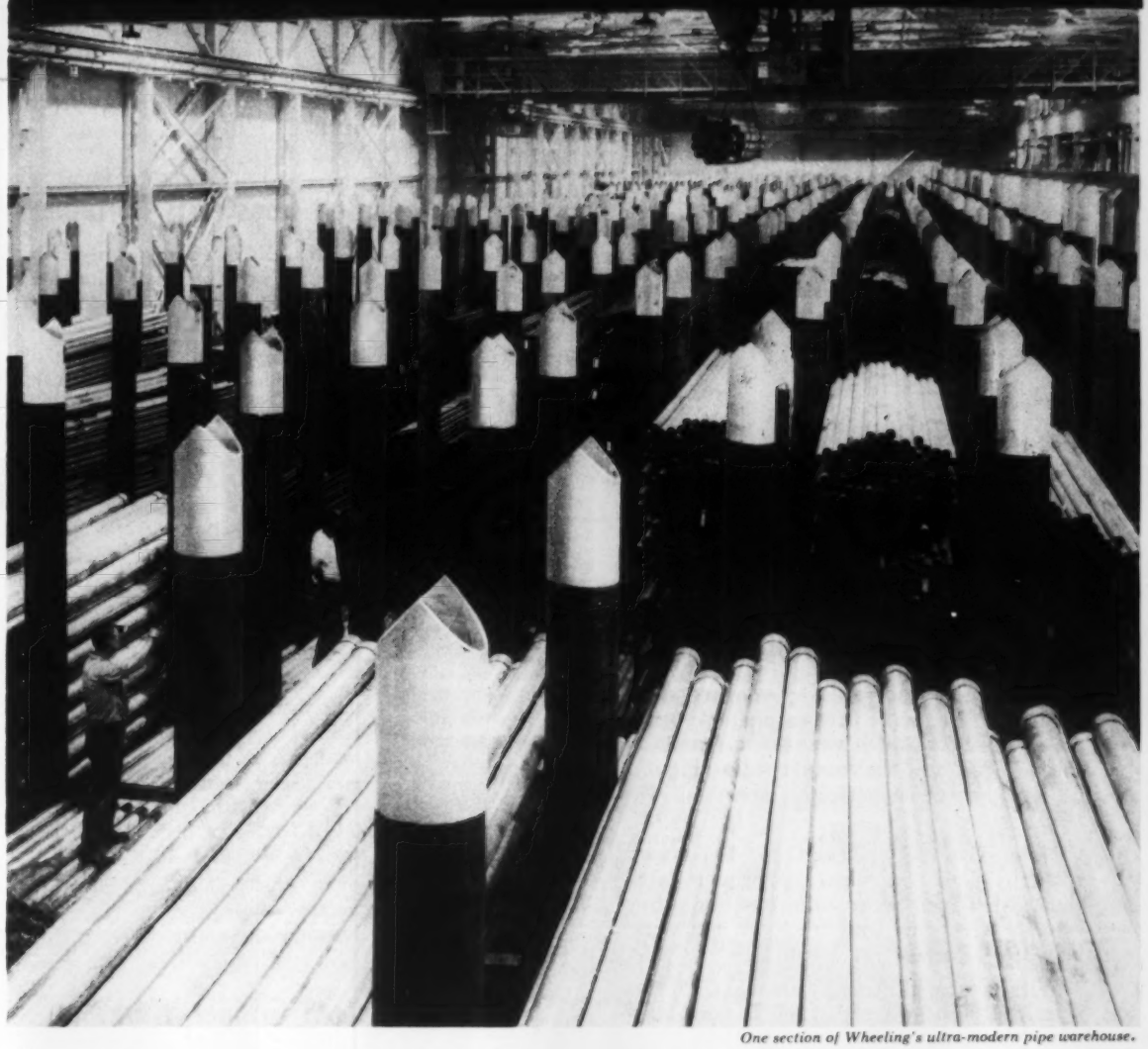
For more information, *write* Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich.

Corrugated Box Printer Cuts Costly Inventories

VALUABLE storage space can be saved and costly inventories of boxes eliminated with the Pannier automatic knockdown corrugated box printer.

It will print the entire carton or will imprint code, product identification, sizes, and similar information on preprinted boxes to accommodate a day's requirements. It

STEEL PIPE BY WHEELING



One section of Wheeling's ultra-modern pipe warehouse.

With Wheeling Steel Pipe, YOU KNOW!

You know you're right when you use Wheeling Steel Pipe. That's because only steel pipe combines economy and dependability with superior mechanical strength.

What's more, you'll always get prompt delivery on Wheeling Steel Pipe. For Wheeling has just completed a $5½-million program to expand and improve its pipe making, warehousing and shipping facilities. *Wheeling can serve you better than ever before!*

Get the story on Wheeling Continuous Weld Steel Pipe, both black and galvanized, from your Wheeling representative this week. Wheeling Steel Corporation, Wheeling, W. Va.

Why Wheeling Steel Pipe is First Choice!

- Lowest cost with durability
- Strength unexcelled for safety
- Formable — bends readily
- Weldable — easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
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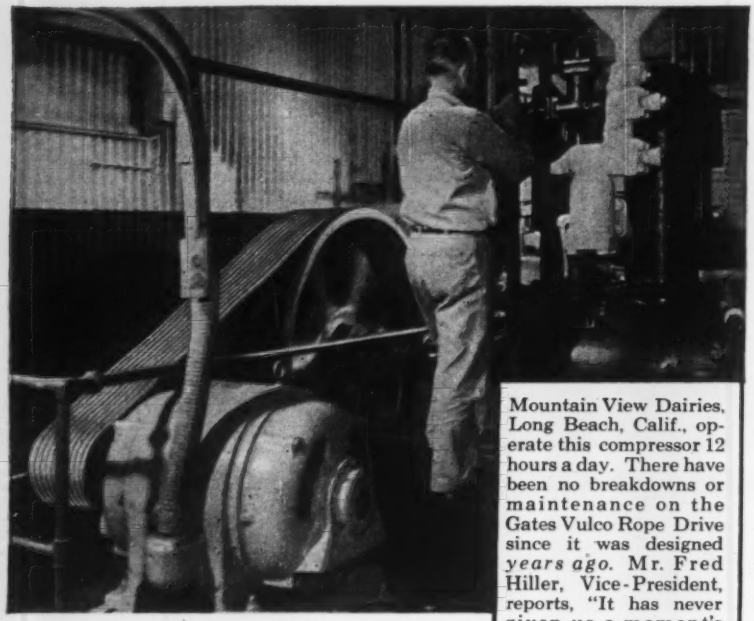
- Available everywhere from stock

WHEELING STEEL CORPORATION · IT'S WHEELING STEEL! *District Sales Offices at Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Houston, New York, Philadelphia, St. Louis, San Francisco, Wheeling*



Mountain View Dairies, Long Beach, Calif., operate this compressor 12 hours a day. There have been no breakdowns or maintenance on the Gates Vulco Rope Drive since it was designed *years ago.* Mr. Fred Hiller, Vice-President, reports, "It has never given us a moment's trouble."

The No. 1 choice of industry everywhere

...the V-belt with concave sides

To prove to yourself why concave sides give this V-belt far longer life, make this simple test: bend a Gates V-Belt as if it were going around a sheave. Feel how the concave sides (Fig. 1) *fill out* . . . become perfectly straight (Fig. 1-A).

Note how the belt makes full contact with the sides of a sheave . . . grips evenly, thus distributing wear uniformly along the sides of the belt. Uniform wear lengthens belt life — keeps costs down.

With a straight-sided belt (Fig. 2) the sides *bulge out* when the belt is bent, and wear is concentrated on the bulge (Fig. 2-A). Uneven wear shortens belt life — increases belt costs.

Because Gates V-Belts with concave sides are so universally preferred, they are the *most widely available.* There are Gates Distributor stocks in industrial centers *throughout the world.*

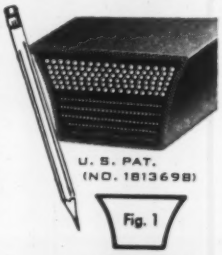


Fig. 1

Fig. 1-A

Fig. 2

Fig. 2-A

The Gates Rubber Company, Denver, Colorado

Gates Rubber of Canada Ltd., Brantford, Ontario

Gates *World's Largest Maker of V-Belts* TPA 392

Gates Vulco Rope Drives

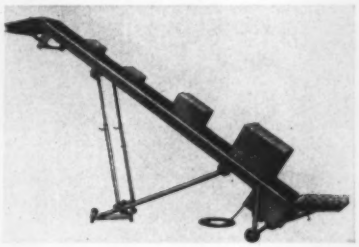
also can be used to print cartons one at a time as needed for production line filling.

The machine will handle cartons up to 21 x 32 in. and will deliver 2400 impressions an hour. For more information, *write* Pannier Corp., 527 Sandusky St., Pittsburgh 12, Pa.

Belt Booster Is Portable

THIS CONVEYOR is easily rolled into position for horizontal, low incline, or 30-degree incline use.

Once in place, a rubber cushioned stabilizer automatically anchors the unit in place. It has a removable front row roller or wheel feeder section that lifts out to minimize the risk of injury should hands get in the pinch-point between the belt and feeder section.



It is available in 11 and 13 ft lengths with 12 in. wide, three-ply belts that travel at 45 fpm. For more information, *write* Harry J. Ferguson Co., West Avenue, Jenkintown, Pa.

Tool Grinder Works to Precise Gage Accuracy

SINGLE point cutting tools can be made more productive with the Micropoint tool grinder.

It grinds tool profiles geometrically correct to precise gage accuracy with either conical or cylindrical relief at the radius, and can handle any tool up to a 1-in. square shank.

The possibility of human error is reduced by direct dial settings which provide a method of fast, simple, and accurate adjustments for radius, cutting angle, offset, and clearance.

Accurate blending of the radius into the flats of the lead and end

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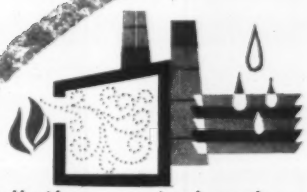
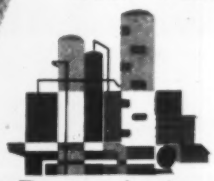
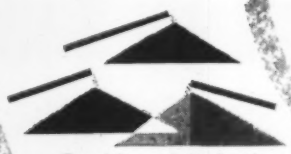


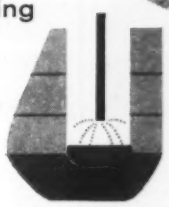
Air pollution control and water treatment



By-products plants



Ore beneficiation and handling

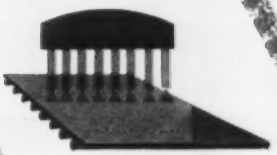


L-D Process plants

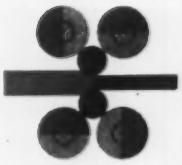
Blast furnaces

Pipe mills

Open hearths



Sinter plants



Rolling mills

Kaiser Engineers designs and builds every part of a steel mill. Been doing it for years. KE has the experience, and the ingenuity, to develop time-cutting, cost-saving new ways to build and operate. The result is a better plant, sooner, for less.

Experience, ingenuity—and a cost-conscious approach. This is what KE can apply to your steel plant expansion program right now. Call or write—today.

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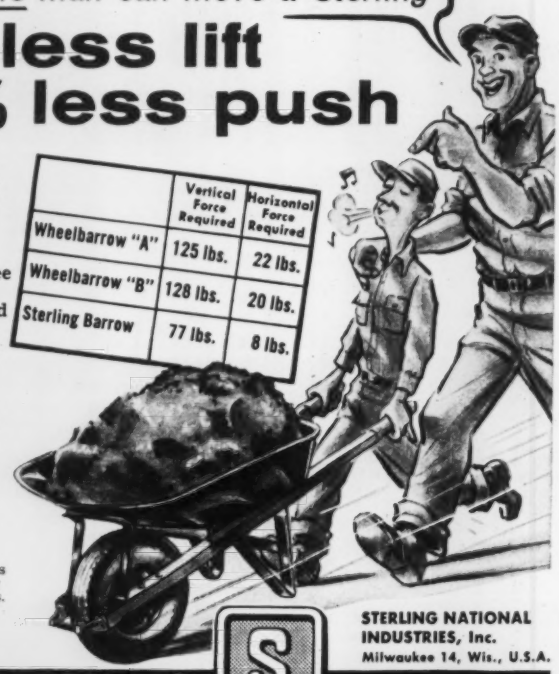
"even a little man can move a Sterling"

40% less lift
60% less push

• Smooth rolling Sterling barrows require a minimum of energy . . . even a little man can move 'em. Tests recently completed with three makes of wheelbarrows, each loaded with 320 lbs. of sand, show Sterlings require 40% less vertical force and 60% less horizontal force . . . an amazing performance record. The actual figures are shown at right.

	Vertical Force Required	Horizontal Force Required
Wheelbarrow "A"	125 lbs.	22 lbs.
Wheelbarrow "B"	128 lbs.	20 lbs.
Sterling Barrow	77 lbs.	8 lbs.



• Yes — it pays to spend a few dollars more for easy rolling STERLING barrows. Write for catalog.

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1. While The Drake is one of America's most distinguished hostelries, it doesn't cost one cent more than other leading hotels to headquarter your meeting here.
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cutting edges gives a tool profile that enhances the size and finish of the machining operation.

For more information, *write* DeVlieg Machine Co., Fair Street, Royal Oak, Mich.

Cleans Parts Ultrasonically

IDEAL for use by manufacturers of small, precision parts, the Econo-Sonic unit precleans, ultrasonically cleans, and pressure-spray rinses.

Complete with a distillation and filtration system, the unit provides all the facilities needed for cleaning in its work-size capacity.

For more information, *write* Dept. R2, Detrex Chemical Industries Inc., Box 501, Detroit 32, Mich.

Titanium Plating Hooks Resist Corrosives

TITANIUM anode hooks and baskets have been developed to meet the critical need for corrosion resistant fixturing in nickel and chrome plating operations.

The titanium hooks can be submerged in the acid, allowing even dispersion of the nickel plate, and sharply reducing nickel scrap loss and recovery costs.

Hooks and baskets are available in standard sizes and shapes. For more information, *write* Mallory-Sharon Metals Corp., Niles, Ohio.

Power Saw Has Selection Of Work Handling Devices

A WIDE combination of work handling equipment is available with the DoAll Model C-24 cutoff saw to adapt it to many applications.

The horizontal type machine cuts material with the top portion of the saw band. This makes possible a powerful and rigid design for fast, efficient, and accurate cutoff with low material waste.

The basic machine has a roller table on the load side of the saw band with or without powered rollers. Powered conveyor tables can be added to either side of the

● in vital structural areas of the mighty

Photo courtesy Columbus Division, North American Aviation, Inc.

the ultra-high-strength alloy steel

VASCOJET® 1000

● This is the deadly A3J Vigilante, built by North American Aviation for the U. S. Navy—a high-speed carrier based weapon of extreme versatility, requiring the utmost in performance of its critical components. All vital structural parts of this plane were made of VascoJet 1000 because of its ultra-high strength and extreme toughness at temperatures from −100° F. to +1000° F. ● Tensile strength of 300,000 pounds per square inch or more is obtainable at mid-radius even in extremely large sections of VascoJet 1000. This steel has the highest strength to weight ratio at temperatures up to 1000° F. of any known engineering material. ● Because it does this job so successfully, you are assured of satisfaction in your own critical applications. VascoJet 1000 is used for fasteners, shafts, gears and machine parts as well as in aircraft, missiles and rockets. Send for our detailed twenty-eight page booklet of engineering data and let us discuss, without obligation, your problems where high-strength steel is required.

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"The Man from Logan" is challenged by the problem of *motion* every working day. Materials handling encompasses the total aspect of motion; direction, speed, and timing of materials moved over a conveying system. "The Man from Logan" is equipped to diagnose and design the *exact* system to fit the demanding needs of small and large users.

Behind the versatility and training of "The Man from Logan" is the company itself. For two generations the Logan Co. has been a name synonymous with quality, performance and dependability.

If you have a problem in the handling and conveying of your materials, why not talk to "The Man from Logan"? A letter or phone call will bring him to you right away.

Logan Conveyors

LOGAN CO., 535 CABEL ST., LOUISVILLE 6, KY.

machine, and run-out tables can be added to the motorized units.

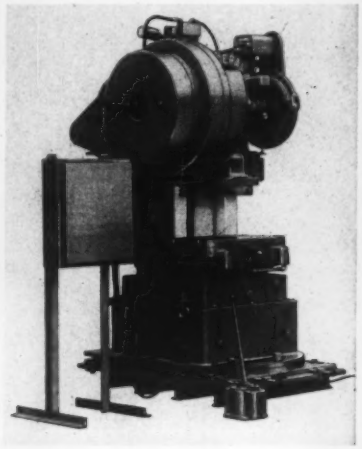
Hydraulic lift rollers can be used in place of the standard rollers. An optional outboard vise holds work from either side of the saw band.

For more information, *write* DoAll Co., Des Plaines, Ill.

Flying Cutoff Press Can Boost Production 100%

PRODUCTION increases of as much as 100 per cent can be achieved on rolling mills by adding this flying cutoff press.

Adaptable to many metalworking operations, the press can be rotated 360 degrees on its base and tilted to any angle. An air clutch control



panel synchronizes the press with the speed of the mill and permits the cutting of required lengths of channels, bars, angles, moldings, and similar shapes.

For more information, *write* Federal Press Co., Elkhart, Ind.

Disc Grinder Makes Job Almost Automatic

DISC GRINDING of parts like bearing races, gear blanks, and valve plates can be done almost automatically on the Besly-Welles DH4 machine.

The double, horizontal spindle, disc grinder has these features: Simplified pushbutton operation, ac-

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Project Alert, as a philosophy of re-awakening, of renewed enthusiasm, of mental alertness, has shown wonderful results since its initiation last fall. Many organizations have asked us for supplies of Project Alert folders and buttons so that they may introduce it to their people. Leading magazines and newspapers, too, have given Project Alert splendid support.

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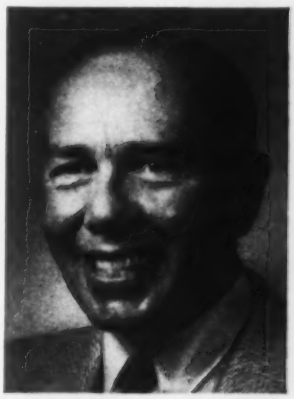

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curacy to tenths, simple three-step abrasive change, automatic dressing and sizing, centralized lubrication, improved coolant system through the spindles.

The machine can handle any part with two flat surfaces of nearly equal area which must be parallel to each other. It grinds steel, cast iron, nonferrous metals, carbides, ceramics, and plastics.

For more information, *write* Besly-Welles Corp., 120 Dearborn Ave., South Beloit, Ill.

Barrel Unit Plates 23,000 Parts an Hour

THIS continuous plating barrel has an hourly output equal to about four batch barrels, and needs attention only for feeding parts and removing the plated work from a tote box.

In one installation, the barrel chromium plates 23,000 parts an hour. Each part is about 1 x ½ x ⅛ in.

The unit is designed so that dry and burnished parts are introduced into one end of the machine and are fed automatically into the barrel which has specially designed baffles to preclude contact marks.

Timing of the barrel is automatic and can be adjusted for thickness of plate and number of parts.

For more information, *write* Metal & Thermit Corp., 100 Park Ave., New York 17, N. Y.

no crane of comparable quality is more CONSERVATIVELY PRICED!

*load brakes
Powerful disc and helix type with high safety factor.
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Only proven equipment of more than ample rating is used. Full overload protection.
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*wheels
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Anti-friction bearings used throughout. Oversized roller bearings (double row) used in main truck wheels.

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*In any crane, these are the parts that handle the heavy work . . . the parts that *must be* top quality if you're looking for crane *dependability.* Compare Cranemaster engineering at these critical points with any industrial shop crane. Then compare prices. Time and time again Abell-Howe proves it has the top value in overhead traveling cranes . . . in capacities to 20 tons—spans to 60 feet.

Send for **BULLETIN C-110**

7747 Van Buren Street ABELL-HOWE COMPANY Forest Park, Illinois

Welding Fixture Is Flexible

THIS manipulator for automatic welding provides maximum flexibility of movement. It consists of a vertical mast and horizontal boom mounted on a pedestal or cylindrical base.

The boom travels 10 to 150 ipm horizontally, and 12 ipm vertically. It has a maximum clearance of 42 in. and provides an effective weld length of 42 in. The mast will pivot 360 degrees and can be locked in any position.

The company also has a new turntable positioner with a load capacity of 500 lb. For more information, *write* Miami Specialties Co., Trade Road, Troy, Ohio.

Salt Removes Rust, Scale

YOU CAN remove rust, scale, and black oxide from steel with Striplite, a nonacid salt which will not attack the base metal.

The salt is dissolved in water at a ratio of 1 to 4 lb per gallon, and the solution is used at 180 to 212° F. If necessary, it also can be used electrolytically. Activity of the solution is proportional to its strength, temperature, and the presence or absence of electric current.

For fast work, cyanide can be added to the electrolytic bath, but caution must be observed.

For more information, *write* Du-Lite Chemical Corp., Middletown, Conn.

Burring Machine Raises Operator Output 65%

PRODUCTION costs can be lowered and valuable time saved by a high speed, highly accurate burring machine.

One application is rapidly reduc-

ing any small weld flash to the dimension of the joined metal. It can also be used for smoothing burrs from machined parts or cleaning out comparatively inaccessible places, such as casting slots.

The high speed has resulted in increases in operator output up to 65 per cent. The machine is quickly set up for each production run.

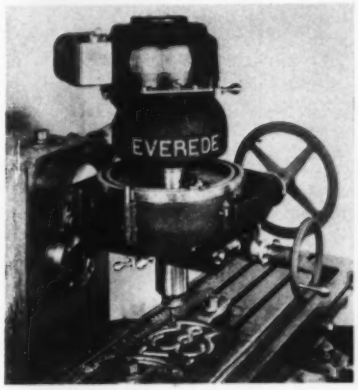
An adaptation of the Rouse hand miller, the machine is set up for burring by stepping up spindle speed to 10,000 rpm, attaching a high speed carbide burr to the output-shaft, and adapting a fixture to accommodate the piece.

For more information, *write* H. B. Rouse & Co., 2214 N. Wayne Ave., Chicago 14, Ill.

Attachment Makes Rotary Milling Possible

USEFUL with horizontal or vertical milling machines, this rotary head attachment has three exclusive features:

1. Direct drive by V-belt from motor to spindle with a choice of six speeds. 2. Double rotary worm shaft, with a front shaft for smooth,



exacting rotation, and a rear shaft for fast head rotation. 3. Cross-slide screw which offsets the spindle from either end of the slide.

The attachment rotates 360 degrees in either direction, and the cross-slide adjustment offsets the spindle up to 3⅝ in.

For more information, *write* Everede Tool Co., 2000 N. Parkside Ave., Chicago 39, Ill.

Dual Spray Machine Doubles Production

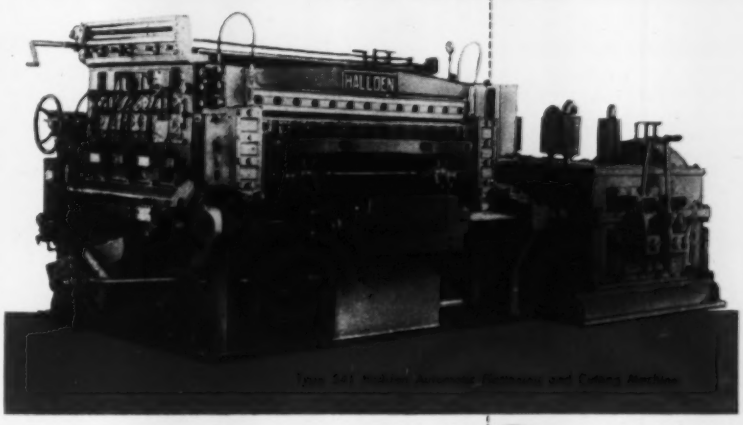
A PRODUCTION increase in painted parts of 200 to 500 pieces per hour is possible through the use of a double, vertical fixture, automatic spray machine.

It enables one operator to turn out more work than can be done by two operators with hand sprayers. The machine is designed for fast, perfect finishing of one, two, or three surfaces of generally oval or rectangular shaped pieces of varying length where fine mask definition and paint demarcation are imperative.

The operator loads one station while the machine is painting in the other. The equipment is ideal for use with a fast conveyor. A new wrist-action device allows the overhead traveling spray guns to be tilted in one or two directions. Square shaft vertical fixtures alternately lower and raise the part, placing it snugly in the mask for painting.

For more information, *write* Conforming Matrix Corp., 345 Toledo Factories Bldg., Toledo 2, Ohio.

Stamco
announces
the addition of [redacted] equipment to their complete line of steel mill equipment. Hallden and Stamco, teamed together...available from one source for complete integrated planning.



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"We can see the SAVINGS since we switched to Wheelabrator® Steel Shot"

A single pound of Wheelabrator Steel Shot, as shown in the hands of Mr. R. L. Smith, Forging Engineer at the Broderick Co., Division of Harsco Corp., Muncie, Indiana, cleans the forgings shown in the large pile. The same quantity of malleable abrasive formerly used could clean only the quantity represented by the small pile.

"The same cleaning production is handled in half the former time with 57% less abrasive," says Mr. Smith. "While cleaning production increased from 275 tons to 642 tons of forgings per ton of shot used, abrasive costs were reduced 43%."

And as a bonus benefit, blasting with Wheelabrator Steel Shot has improved the surface appearance of Broderick's forgings, adding to their customer's satisfaction.

Your Wheelabrator Abrasive Engineer will help you make similar savings in your blast cleaning operations. Write for details of this blast cleaning efficiency engineering service.

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NEW Literature

Write directly to the company for a copy

Molten Metal Pump

A four-page brochure describes pumps that handle lead, babbitt, solder, tin, zinc, spelter, and other molten metals. Bulletin 58-B. Ruthman Machinery Co., Cincinnati 2, Ohio.

Vinyl Clad Metal Laminates

A six-page brochure gives physical and chemical properties of vinyl plastic adhesive-bonded to steel, aluminum, and magnesium. O'Sullivan Rubber Corp., Box 603, Winchester, Va.

How To Order Grinding Wheels

A booklet tells you how to select grinding wheels by type of abrasive, size of abrasive cutting particles, grade of hardness, wheel structure, and type of bond. American Emery Wheel Works, Providence, R. I.

Index of Literature

A 24-page bulletin indexes this company's product catalogs; specifications; technical, industry, and systems bulletins; and instrumentation data sheets. G2-1a. Industrial Div., Minneapolis-Honeywell Regulator Co., Wayne and Windrim Avenues, Philadelphia 44, Pa.

Aluminum Heat Exchangers

"Reynolds Aluminum for Heat Exchangers," 16 pages, offers technical information needed by the heating engineer, fabricator, and industrial purchaser. Dept. PRD-2, Reynolds Metals Co., Box 2346, Richmond, Va.

Programming Computers

"Automatic Programming for Business Applications" describes the development of recently announced methods of automatic programming for business and science. They involve writing verbal commands (in English) into the computer (instead of complicated machine codes). Remington Rand Div., Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.

NEW BOOKS

Welding Type 347 *Stainless Steel Piping and Tubing*, George E. Linnert, American Welding Society, 33 W. 39th St., New York 18, N. Y. 103 pages, $3.50. Type 347 stainless has been generally regarded as nearly foolproof and one of the more dependable grades, particularly in welded applications. Recently, difficulties have been reported in welding Type 347 piping and tubing. This Welding Research Council report is a comprehensive review of available information on the steel. The main portion of the report is devoted to welding procedures and joint properties.

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U. S. Army Photograph

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Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF ACME STEEL COMPANY

March 2, 1959

Steel Shipments Slated for Big Jump

FINISHED STEEL shipments will top 7 million tons this month, giving consumers their first real chance to increase inventories since the recession ended. Not since June, 1957, have shipments been so high. In recent months, they've barely exceeded consumption. As a result, users have had little opportunity to replenish their stockpiles. There has been only a modest buildup since October, when inventories bottomed out at 12 million to 13 million tons. From now until June 30, users will take in more steel than they'll use. By midyear they'll have 21 million to 22 million tons (see Page 170).

NO LETUP IN SIGHT— Consumers are pressing for everything they can get before July 1. A few weeks ago they were trying to line up April and May deliveries, hoping to keep storage and finance charges at a minimum. Now they're asking that orders be shipped immediately. Chances of having deliveries speeded up are poor. Most mills are fully booked on flat-rolled products, and few have open tonnage in oil country goods, bars, plates, or structurals. Chicago steelmakers are allocating all their products. They're sold out on wide flange beams but still have second quarter space for standard shapes.

SERVICE CENTERS SALES UP— In most sections of the country, sales by steel service centers were up last month. The gains were none too impressive in New York and New England, but shipments of midwestern distributors rose 15 to 30 per cent. Warehouses are getting more "hurry up" orders as their customers step up production. At present, little of the buying at service centers is aimed at inventory building.

STRUCTURAL JOBS SPEEDED— The possibility of a midyear steel strike is accelerating the planning and placing of structural contracts in the East. Many of the big fabricating shops have labor agreements that expire when the mill contracts run out. Fabricators whose contracts don't expire until later have other worries—how to get shapes and plates during a strike, for instance. Builders and architects are speeding up work where they can, bearing in mind also the probable effects of labor demands on costs. In cases where engineering work isn't far advanced, projects may be suspended until the steel labor situation is clarified.

BAR DELIVERIES LENGTHEN— Users of cold-finished bars have waited too long to order and now face disappointment, producers warn. In some cases, they've called mills in late February asking for March delivery. They're being informed that they can get nothing before late April or early May. Cold drawers have delivery problems of their own. They can't get hot-rolled carbon or alloy bars before mid-April. Most active of the cold-finished bar buyers are automotive part suppliers, fastener manufacturers, screw machine companies, and the electrical industry. Jobbers are least active.

INGOT RATE ADVANCES— Last week, steelmakers boosted their operations 2 points to 88 per cent of capacity. Production was about 2,492,000 net tons of steel for ingots and castings, the largest of any week since June 23, 1957.

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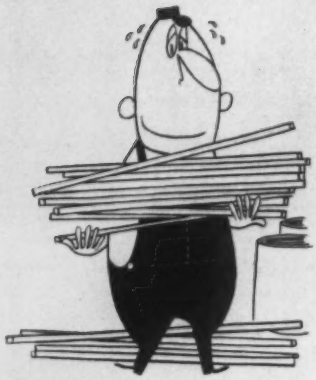
*Current prices were published in the Feb. 23 issue and will appear in subsequent issues.

The Steel Inventory Situation



Finished Steel . . .

Buildup of semifinished at steel plants portends: In March, monthly shipments of finished steel will top 7 million tons for first time since June, 1957.

Steel Inventory Buildup . . .

Users will add about 8 million tons to stocks this half, boosting their inventories to 21 million or possibly 22 million tons by July 1 when labor contract expires.

Strike Odds Dip as Steel Stocks Rise

STRIKE-HEDGE buying is lowering the odds on a steel strike.

Most observers still think we'll have one, but they're not as positive as they were a couple of weeks ago.

STRIKE-HEDGE buying is also putting a false front on our ingot rate.

It hit 88 per cent of capacity last week, a hair below the all-time record weekly tonnage figure. Metalworking's business isn't that good.

• **Doubling Up** — Steel users are rushing to build inventories to nearly double what they were in the fourth quarter of 1958. That's what they figure they'll need to sweat out a four to six week, or longer, strike. So far there has been little, if any, panic in their buying, and major producers told STEEL last week that the situation is well under control.

• **Timetable** — Inventories were down to about 12 million to 13 million tons following the severe cutback of 1957-58; about 1 million tons were added during the fourth quarter. The buildup is expected to follow this pattern: During the first half, estimates of stock input range from 6 million to 13 million tons, with 8 million the most commonly mentioned figure. That would take users' stocks up to about 21 million tons by June 30 when the steel industry's labor contract expires.

Most producers hastily point out that their projected inventory figures are not absolutes. "Few of us agree on exactly what constitutes inventory, and certainly nobody knows just how much tonnage is in it. But if you use those figures as an index, you at least get a sense of direction and magnitude," comments one steel official.

• **Three Kinds**—Not all the buildup is a hedge against a steel strike, officials emphasize. "Actually, there are three aspects to the buildup," states one commercial research manager. "First, users carried liquidation too far last year, and they are trying to bring stocks up to workable levels. Second, their rate of consumption is greater, and they require a higher level of inventory for normal operations. Third is the hedge against a steel strike."

At a Glance

Strike?

4 to 6 weeks would cut stocks to Jan. 1 level; 8 weeks would put them at rock bottom; 0 to 2 weeks would cut ingot rate 50%, with slow recovery to 75% by yearend.

How much of today's ordering is prompted by the strike threat? Thirty-five per cent, says one eastern producer. Between 15 and 20 per cent, says an official of one of the medium size steel companies.

• **Not Too High**—One thing most officials agree upon: Inventories will not be excessively high on July 1. Says Marcus J. Aurelius, administrative vice president, U. S. Steel Corp.: "I expect an increase of about 6 million tons in steel inventories during the first half. This would bring stocks to . . . not far above the level prevailing after the steel strike in 1956." Even if stocks rose to 22 million tons, they would still be perhaps 3 million tons short of the level in mid-1956, when the industry was struck for five weeks.

To make any substantial headway on inventory, shipments of finished steel from the mills will have to average about 7 million tons a month. They haven't broken that mark since June, 1957, but they should make it this month.

• **Strike Consequences** — If inventories reach 21 million tons, most industry officials feel that a four to six week strike in steel would have little, if any, economic consequences. Stocks would drop back to about the level prevailing at the beginning of the year, but few users would have to shut down except for imbalances in supplies.

As one market analyst points out: "Even during a strike, about 10 per cent of the industry would still be operating, and imports would probably be stepped up a bit. Then, too, many users might try to schedule their vacation periods at that time, so that consumption would drop to 5 million tons a month."

After such a strike, steelmakers agree that the industry's operating rate would bounce right back to about 75 per cent of capacity.

Occasional higher rates could be expected during the fourth quarter.

• **Impact of Longer Strike**—If the strike should last six to eight weeks, as expected by purchasing agents queried by STEEL (see Feb. 16, pp. 93-95), most producers feel the impact on the economy would be substantial. Users would liquidate their stocks bought as a hedge against a strike, and they would be forced to dip into their ordinary working inventories, taking them down to rock bottom. Imbalances would show up quickly, forcing many of them to shut down. This would be the critical period in any wage negotiations, bringing economic and social pressures to bear on the companies for quick settlement.

Under such circumstances, steelmaking operations would jump almost immediately after the settlement to 90 or 95 per cent of caacity, remaining strong until yearend. But producers feel that too much output would be lost to permit them to reach their minimum goal of 110 million tons for the year.

• **No Strike**—If there is no strike, or a short one, there will be a decided slump in the steel industry during July and August, with operations going as low as 45 to 50 per cent of capacity at first. (Some producers who hold that even a 20 million ton inventory will not be excessive maintain July and August would not be much different from other normal summer months.) There would then be a slow buildup to about 75 per cent of operations toward the end of the year.

• **Effect on Negotiations**—Some observers feel that the buildup will work in favor of management in contract negotiations, dropping the odds for a strike. (Negotiations are scheduled to get underway in New York on May 20 or 21.) They figure that the higher stocks go, the less will be the pressure from users for summer and early fall delivery.

Another observer feels that the labor situation may counterbalance any influence of high stocks. "What can they lose? Operations—and employment—would be down anyhow if there is no strike. The union may figure it might as well strike and have everybody out, but win more increases than they would in a strikeless settlement."

Sheets, Strip . . .

Sheet & Strip Prices, Pages 182 & 183

Tight and getting tighter: That's the way the sheetmakers describe the flat-rolled supply situation. Cold-rolled and galvanized sheets are being allocated, though producers shy away from the term, preferring to say that tonnage is being booked on the basis of traditional buying patterns.

Hot-rolled sheets are not in as tight supply as the other flat-rolled items, but they're getting tighter as demand increases.

It's thought the automakers have pretty well covered their requirements for the first half. Their ordering rate, in any case, is unchanged. But the leadtime for May orders hasn't arrived, and there is still the possibility that if sales of new cars don't perk up, steel tonnage for May delivery may be trimmed back.

Mills are experiencing few complaints of slow deliveries. There can be two explanations: 1. The mills have tried not to overbook, so they are not too far back in their shipments. 2. Steel orders are for inventory, not current manufacturing.

Producers hold a lot of June orders, and their books will be full by the time leadtime arrives. They are even getting some orders for third quarter, and they are being allocated like those for the second quarter.

Not much significance is being attached to third quarter orders. It's figured that buyers are simply trying to protect themselves. In event of a strike and inventories drop, these orders might receive preferred treatment, it's thought. Should a strike be averted, the orders could be canceled.

Demand for narrow cold-rolled strip specialties is extending deliveries to New England consumers. Converters there are sold well into second quarter, and, in some cases, are hard pressed for hot-rolled specifications.

Seymour Mfg. Co., Seymour, Conn., made the first shipments of stainless last month. Buying by manufacturers is heavier than that by distributors, although distributors are taking up setaside tonnage reserved for them through the second quarter.

Except for 430 stainless, automotive demand for flat-rolled steel by New England parts suppliers is slower than it was last year.

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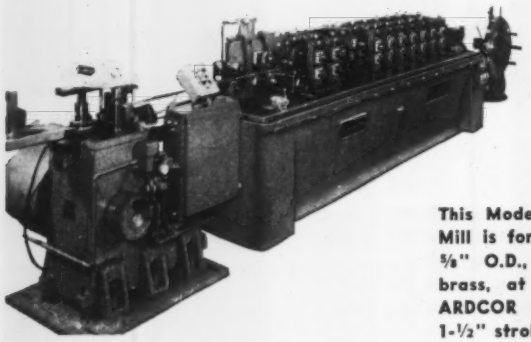
NEW LOCK SEAM TUBE MILL

Maximum Capacity Up To 1" O.D.



This Model SF Lock Seam Tube Mill is forming TV table legs of 5/8" O.D., .016" wall simulated brass, at 120 f.p.m. Cutoff is ARDCOR Model 10 Press with 1-1/2" stroke, 60 strokes per min.

The new small Model SF ARDCOR Machine features: High production speeds; roll space 5.5"; spindles 1.5"; new style rugged base with tool compartment and slanted front recessed for better operator stance; special narrow side roll stands with close 10" horizontal centers; fixed spur gears; quiet running all V-belt drive; compact 3-roll straightener; low voltage protection. Basic machine readily converted to a Cold Roll Forming Machine.

ARDCOR Roll Forming Machines and Lock Seam Tube Mills are available in seven standard sizes, other sizes to customer specifications.

If your products can be cold roll formed, ARDCOR engineers can supply advancements in design and machine construction to produce them better . . . at greater speeds and profit.

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Appliances To Consume More Galvanized Sheets

Appliances and galvanized ware are expected to consume 20 to 25 per cent more galvanized sheets this year than they did in 1958. The general strengthening of the economy is expected to be reflected in a stronger demand for appliances.

Last year shipments of galvanized sheets for use in appliances and galvanized ware increased 12.4 per cent over those in 1957, says the Committee on Galvanized Steel Sheet Research. Its data are based on figures compiled by the American Iron & Steel Institute.

The increase compares with a rise of about 18 per cent for the galvanized sheet industry over-all and an average decrease of 25 per cent for all steel products.

Galvanized sheets for use in com-

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mercial and home refrigerators accounted for the greatest part of the appliance tonnage. Shipments amounted to 42,711 tons, up 18.5 per cent from 1957.

The tonnage for use in household appliances showed the sharpest rise —an increase of over 80 per cent. But shipments for use in washing machines and ironers dropped 7.5 per cent, while the tonnage for utensils and galvanized ware went up 10.8 per cent.

Tin Plate . . .

Tin Plate Prices, Page 183

Shipments of metal cans in 1958 totaled 4,760,725 tons, reports the Bureau of the Census. In 1957, the total was 4,594,968 tons.

December shipments were 288,651 tons, vs. 315,759 in November, and 291,521 in December, 1957.

Fruit and vegetable can shipments amounted to 1,509,759 tons last year, vs. 1,494,372 the year before.

In December, shipments of fruit and vegetable cans were 58,553 tons, vs. 74,475 in November, and 68,374 in December, 1957.

The movement of beer cans (second largest category) was 820,481 tons last year, compared with 791,507 in 1957.

December shipments are 61,093 tons, vs. 62,122 in November, and 56,515 in December, 1957.

Wire . . .

Wire Prices, Pages 183 & 184

While there is some hedge buying for April shipment, May and June are expected to bring out much heavier volume.

Consumption of wire and wire products is up moderately, notably high carbon precision springs and fastener makers' requirements. Automotive needs are also heavier. Industrial wire users are showing more concern for their second quarter supplies, and, in scattered instances, are placing protective orders through June.

Rod demand is heavier, and converters appear more disposed to cover their needs through the second quarter.

Reid Avery Co., Baltimore, has booked 130 tons of welding electrodes from the Navy.

See these reels at the Western Metals Exposition **SPACE 1166**

SCRUBBING THE SURFACES OF PLANES to reduce friction at supersonic speeds formerly was done by several men, working laboriously with hand cleaning equipment. But the installation of cleaning units like this one, equipped with WELDREEL dual hose reels, has cut to a minimum the time and manpower required . . . *and results in better cleaning.*

Using one hose for compressed air and the other for cleanser or detergent, cleaning may be completed in a short time by one man. The reel permits hose to be paid out to the length required . . . holds it there with a self locking pawl . . . and retracts it automatically with a heavy spring.

Designed to handle flammable fluids and gases safely in dual and single hose, leakproof WELDREEL reels are adaptable to a wide variety of industrial applications. Write for full information.

MODEL OA-A holds 50′ of 3/16″ or 40′ of ¼″ dual hose. Model OAB has capacity for 150′ of ¼″ or 125′ of 5/16″ hose.

MODEL EA-2 with current capacity of 300 amps holds 50′ of 2/0 welding cable. Model EA has capacity of 100′ cable.

MODEL A-1 has 50′ capacity of ¼″ or ⅜″ I.D. single hose. The larger Model A-2 holds 50′ of ½″ hose.

UNITED SPECIALTIES INC.
POST OFFICE BOX 698 EL DORADO, ARKANSAS

Steel Bars . . .

Bar Prices, Page 181

Business in the commercial steel bar market is improving. Modest gains in demand are reported for hot bars, while cold drawn and alloys are moving in noticeably better volume.

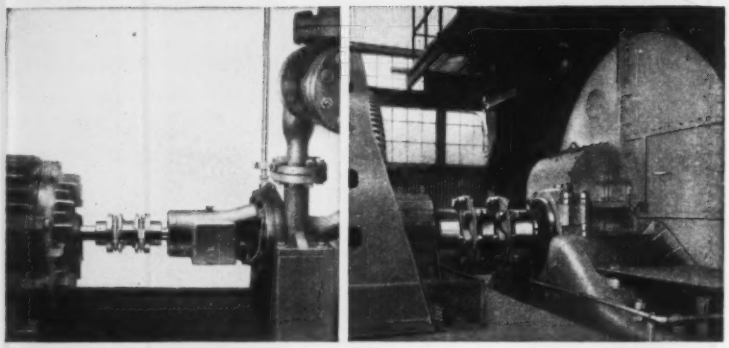
Hedge buying is increasing, though some business is for immediate manufacturing requirements. But most of the ordering appears to be for projected needs.

Cold drawers are ordering more hot bar stock. Some of them say their drawing operations are held back by their inability to get all the hot stock they need for immediate use. One Pittsburgh area producer says customers are entering the market for substantial tonnage after delaying the placing of orders for weeks. Some seek March delivery tonnage. This maker is sold up through May. Even the warehouses are ordering cold finished in better volume.

The bulge in cold finished is largely in the smaller sizes, both carbon and alloy grades. In general, April schedules are filling more rapidly than March's, with some users covering through May and June.

Deliveries on hot-rolled bars still range two to four weeks. Early rollings are not as easy to catch, and there is a noticeable tightening in schedules on the larger sized rounds. Cold-drawn carbon bars are still available in two to five weeks, cold drawn alloys in six to eight weeks.

Protect your PUMPS and other Indispensable MACHINERY with THOMAS FLEXIBLE COUPLINGS



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- Torsional Rigidity
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- No Maintenance

Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

Tubular Goods . . .

Tubular Goods Prices, Page 185

Pressure for oil country goods is mounting. One leading Pittsburgh area producer last week reported its order book was full through the second quarter. Demand, it says, has been noticeably heavy for certain sizes of casing and tubing, notably 9⅝ and 13⅜ in.

Requirements for merchant pipe continue to lag. But producers think there will be a sharp upturn in demand shortly. Prospects are considered promising for a strong seasonal spurt in construction requirements this spring.

Pipe mills say consumers are showing increasing interest in hedge buying. It's still uncertain whether this means the mills will shortly become loaded with tonnage as consumers rush to protect themselves against possible strike-induced shortages this summer.

There's no question, though, that the oil companies are actively replenishing their inventories—largely as protection against midsummer shortages since well drilling hasn't picked up appreciably. Buyers say they'll take first quarter delivery of all the tonnage they've ordered for first half.

Line pipe sales are somewhat improved.

Distributors . . .

Prices, Page 186

The steel service centers are doing better. Business is definitely improved, though demand isn't developing at the same rate it is at the mill level. Orders aren't up to distributors' expectations, though at Pittsburgh, more quick shipment orders are noted.

Generally, it's thought distributors' volume will rise sharply in

the second quarter, especially should consumers find mill shipments backing up because of overloaded order books. Allocations and extended deliveries are directing some orders to warehouses.

Improved demand at the warehouse level is largely in the flat-rolled products, notably galvanized sheets. Some gains are also noted in alloy specialties, tool, and die steels.

A spokesman for major distributors in the Southwest has revised his forecast upward on first quarter volume. He expects business will be 15 to 20 per cent above the fourth quarter's. He previously forecast a 10 per cent rise.)

Plates . . .

Plate Prices, Page 181

Eastern plate mills can still accept orders for sheared material for April delivery. But some fabricating shops are ordering slightly beyond that month, placing strike hedge tonnage in rising volume. In fact, makers are almost unanimous in thinking that the pickup in ordering is due to hedge buying rather than increasing immediate consuming requirements.

Demand is rated "good." It is expected to keep moving upward through the middle of the second quarter.

In New England, a slight pickup in demand is noted, but absence of strong buying for capital goods equipment adversely affects weldment volume and tends to hold back forward buying. Tank shops have built up stocks of underground tanks for installation this spring, and they will be slow in rebuilding inventories of light gage plates until these finished units are moved.

Columbia - Geneva Steel Div., U. S. Steel Corp., is supplying 1140 tons of plates, including floor plates, for a passenger and automobile ferry being built by Puget Sound Bridge & Dredging Co., Seattle, for Black Ball Transport Inc.

The largest recent plate job in the Pacific Northwest went to the Gunderson Bros. Engineering Corp. It was placed by the Navy and involved 2000 tons, including light structurals.

Expectations are demand for tin plate will remain at a high level through the first half. Canning companies are preparing for the 1959 pack, and the canmakers are replenishing their inventories as protection against a possible steel strike at midyear.

Granite City Steel Co., Granite City, Ill., reports its tin plate order bookings in February were 50 per cent above those placed in January.

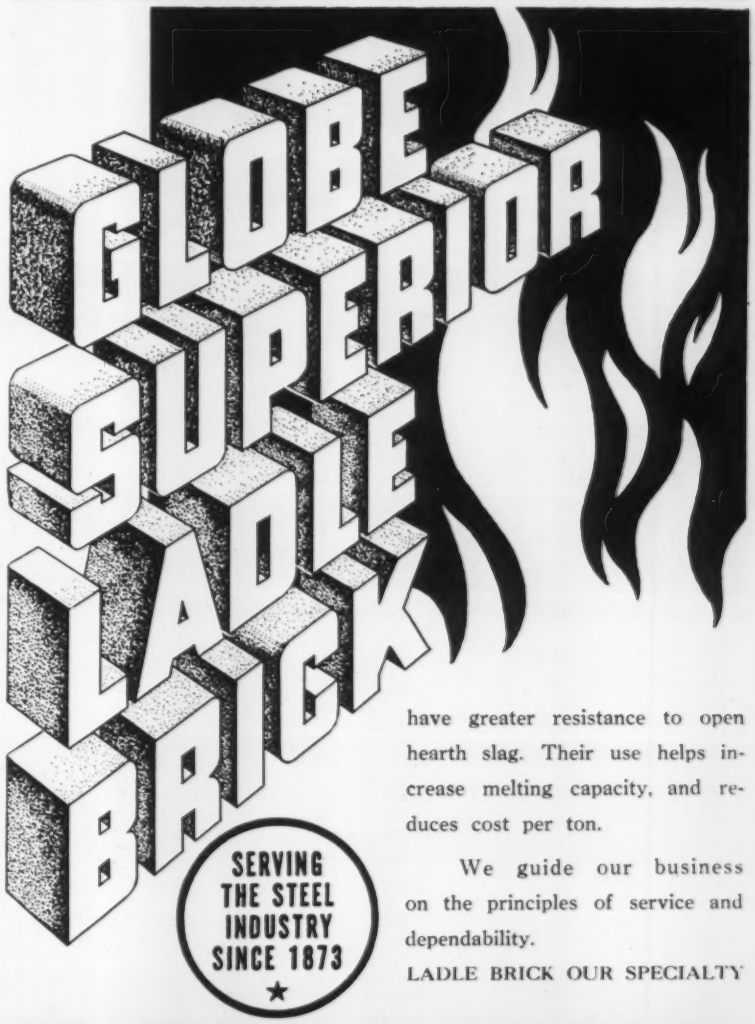
Pig Iron . . .

Pig Iron Prices, Page 186

Blast furnace production of pig iron and ferroalloys in January was 6,260,395 net tons, 77.9 per cent of capacity, reports the American Iron & Steel Institute. Included were 48,572 tons of ferromanganese and spiegeleisen. The performance compares with 6,072,890 tons in December and 4,785,269 in January, 1958. It was the largest monthly output since October, 1957, when 6,454,450 tons were produced.

Merchant iron shipments show a little improvement, with foundry consumption rising, though still limited. Most shops are not operating above 60 per cent.

More idle blast furnaces are



have greater resistance to open hearth slag. Their use helps increase melting capacity, and reduces cost per ton.

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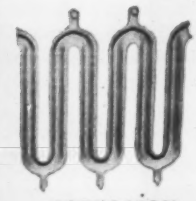

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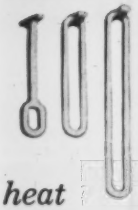

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being relighted as the pressure for iron rises in step with expanding steelmaking operations. At Buffalo, Wickwire Spencer Div., Colorado Fuel & Iron Corp., plans to blow in a second stack now being repaired. When this happens, all ten of the steel mill blast furnaces in the district will be engaged. There are still two idle merchant stacks in the area.

Republic Steel Corp. resumed operation of its No. 2 blast furnace at East Thomas, Ala., last week. The stack has been idle since last July, and has been relined.

U. S. Steel Corp. has relighted its No. 1 blast furnace at the Duquesne Works near Pittsburgh. It had been idle since December, 1957, and its reactivation leaves only one of the Duquesne Works' six stacks idle.

Structural Shapes . . .

Structural Shape Prices, Page 181

The possibility of a steel strike this summer is speeding up the planning and placing of structural contracts. In some instances, where engineering is not too far advanced, jobs may be delayed until the steel labor outlook is clarified.

A strike may not immediately affect operations of some farbricating shops; some may not be affected at all. That's because labor contracts with many shops do not expire until after the showdown at the steel plants. A walkout at the mills could be called and ended before the time comes for a settlement at many fabricating plants.

But some of the largest fabricators' contracts expire about the same time as mill agreements end. This means they would probably close with the steel mills if a strike is called at midyear.

What many fabricators chiefly worry about is an adequate supply of plain material—shapes primarily, and, to an important degree, plates. By the time the strike deadline rolls around, many shops will probably have built up their inventories substantially.

Builders and architects are speeding up work where they can, bearing in mind the probable effects of labor demands on costs.

Shapes are in easier supply than other major products, including bars. There is some tightening,

though, mostly in wide flange sections. Easy supply conditions could change quickly as the expanded capacity of the last couple of years fills up and the strike deadline nears. Already there has been a perceptible tightening in plate supply.

Fabricators are cognizant of this change, and are not only placing more orders for plates, but they are showing more interest in structurals. In the Chicago area, within the last several weeks, mill bookings for second quarter have gained noticeably, and some sellers can't fully accommodate demand for wide flange sections, though there's still some second quarter space in standard shape rolling schedules.

Bridge estimating is slightly heavier in New England. Contracts include 4800 tons for commercial buildings at Hartford, Conn. Wide flange beam volume is heavier in the district. A low bid on 1250 tons for a 13-span structure at Montpelier, Vt., was 12.10 cents a pound, including erection.

A large new job in the Pacific Northwest is the proposed trans-Columbia River interstate bridge at Astoria. Financial details have yet to be worked out.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 182

Imports are an irritating factor in the reinforcing steel market, particularly at coastal points. In the Pacific Northwest, imports of concrete bars and light shapes from Japan and Europe are reported to have totaled 8500 tons in 1958 and 4000 tons in January.

This competition is handicapping domestic producers and is resulting in price fluctuation.

District fabricators report a fair volume of tonnage is out for public works, highways, and industrial construction projects. Highway bids at Salem, Oreg., to be opened Mar. 3, involve 900 tons of reinforcing bars.

Tool Steel . . .

Tool Steel Prices, Page 185

Shipments of high speed and tool steel (excluding hollow drill steel) totaled 70,270 net tons in 1958, reports the American Iron & Steel Institute. It compares with 98,712 tons in 1957, 125,866 in 1956, and 114,529 in 1955.

December shipments were 6835 tons, compared with 6601 in the preceding month, and 6710 in December, 1957.

Prices on solid cemented carbide drills, reamers, and end mills have been increased by Super Tool Co., division of Van Norman Industries, Detroit. The increase ranges up to 10 per cent on items ¼ in. in diameter and larger. It is in line with recent advances by major carbide metal producers. It does not apply to cutting tools tipped with the carbide metal.

Stainless Steel . . .

Stainless Steel Prices, Page 185

Four contracts, involving 245 tons of stainless steel sheets, have been placed by the General Stores Supply Office, Navy, Philadelphia. Of the total, 186 tons will be supplied by Eastern Stainless Steel Corp., Baltimore, at a cost of $241,-144, while 59 tons will be supplied by the Ingersoll Steel Div., Borg-Warner Corp., Chicago, at a cost of $78,286.

Chemical Prices Reduced

Immediate price reductions on three amine-borane compounds are announced by Callery Chemical Co., Pittsburgh. New prices (per pound in 100 lb lots) are: Pyridine-borane $14; dimethylamine-borane $20; trimethylamine-borane $22.

Purchased in lots of less than 100 lb, prices range to $1.50 a pound more on each compound. All prices are f.o.b. Callery, Pa.

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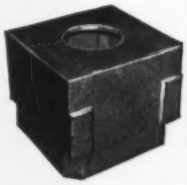

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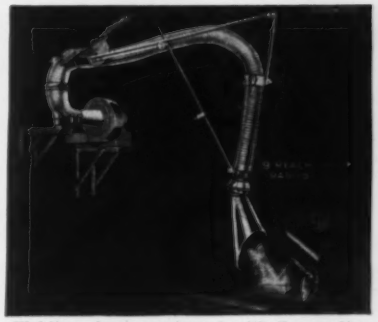

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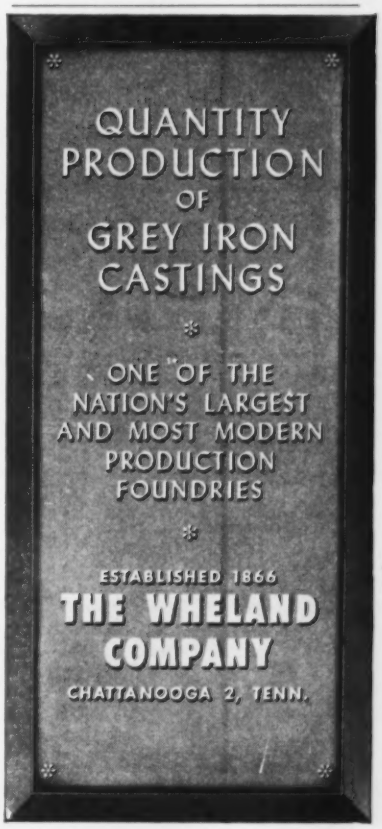


ducing agents in nonaqueous solvents, polymerization catalysts, antioxidants, and stabilizing agents.

Japan Taking Coast Scrap

Shipments of scrap to Japan are running about two boatloads a month, and San Francisco suppliers anticipate an increase in the export volume.

Demand from Pacific Coast mills is not great, but talk continues of a possible price increase when March postings appear.

The buyer for one of the large mills, however, says there will probably be no change. He feels that the recent breaking off of price negotiations in Japan (Feb. 20), will take pressure off prices for another month at least.

Semifinished Steel . . .

Semifinished Prices, Page 181

Steelmaking operations advanced 2 points last week to 88 per cent of capacity. That's equal to output of 2,491,571 net tons for the week and is the highest rate of production since the week ended June 23, 1957. The record: 2,525,000 net tons in the week ended Dec. 17, 1956.

Sharon Steel Corp. is starting up its Lowellville, Ohio, steelworks which has been on standby since last April. Three open hearth furnaces, plus the blooming mill and bar mill facilities, are being reactivated.

Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., is scheduling the relighting of a second open hearth furnace. This Buffalo district mill is experiencing a pickup in demand for wire products from roadbuilders and the wire fence industry.

Tonnagewise, 90.5 per cent ingot operations in the Chicago district are the best in that area since the week ended Jan. 6, 1957.

St. Louis area producers expect capacity operations until July in sheets, plates, tin plate, and galvanized sheets. Orders or commitments on books assure capacity output in those categories the first half. Third quarter books are not opened, but they are expected to be by mid-April.

Steel Shipments by Markets—December, 1958

(Net tons; all grades)

	December, 1958	12 Month Totals 1958	1957
Markets:			
Converting & Processing	254,469	2,854,574	3,396,529
Forgings (other than auto)	88,818	767,217	1,056,036
Fasteners	99,504	878,873	1,149,545
Warehouses:			
Oil & gas industry	112,864	1,004,510	2,323,742
All other	902,915	9,897,773	12,183,566
Total warehouse	1,015,779	10,902,283	14,507,308
Construction:			
Rail transportation	1,997	43,155	71,097
Oil & gas	109,773	2,099,785	3,469,507
All other	569,924	6,579,609	8,982,681
Total construction	681,694	8,722,549	12,523,285
Contractors' Products	299,263	3,467,189	3,403,580
Automotive:			
Cars, trucks, parts, etc.	1,298,028	9,850,140	13,895,315
Forgings	30,901	274,894	331,781
Total automotive	1,328,929	10,125,034	14,227,096
Rail Transportation:			
Rails, track, equipment	52,348	584,664	1,406,157
Cars & locomotives	91,131	866,780	2,703,006
Street railways, etc.	2 160	20,668	39,911
Total railroad	145,639	1,472,112	4,149,074
Shipbuilding, etc.	65,578	797,511	1,277,772
Aircraft	6,725	62,209	99,561
Oil & gas drilling	31,433	305,923	700,501
Mining, quarrying, lumbering	16,095	179,505	328,803
Agricultural:			
Machinery	82,082	902,591	915,151
All other	19,985	290,523	182,951
Total agricultural	102,067	1,193,114	1,098,102
Machinery, equipment, tools	342,712	3,181,196	4,512,298
Elec. machinery, equipment	180,051	1,771,514	2,085,675
Appliances, utensils, cutlery	180,261	1,590,095	1,558,569
Other domestic & commercial equipment	155,070	1,715,542	1,837,940
Containers:			
Cans and closures	123,555	5,252,071	4,830,538
Barrels, drums, pails	72,492	800,326	817,533
All other containers	50,149	516,186	589,512
Total containers	246,196	6,568,583	6,237,583
Ordnance, other military	18,971	238,690	356,406
Nonclassified shipments	60,430	691,571	820,119
Total domestic shipments	5,319,684	57,485,284	75,325,782
Exports	192,685	2,429,149	4,568,795
Total shipments	5,512,369	59,914,433	79,894,577

Data from American Iron & Steel Institute.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

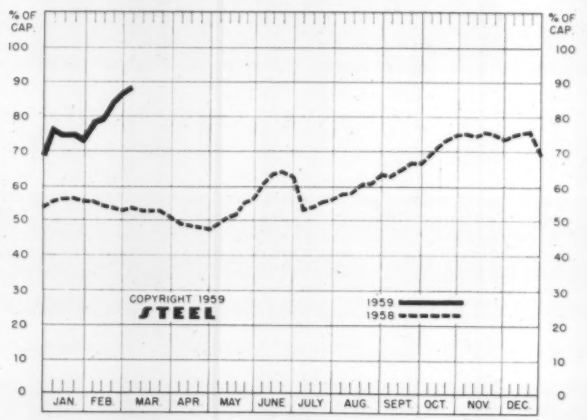
	Week Ended Mar. 1	Change	Same Week 1958	1957
Pittsburgh	87.0	0	58.5	98
Chicago	90.5	+ 1.5	60	96
Eastern	86.0	+ 1.0	67	99.5
Youngstown	88.0	+ 8.0	55	98
Wheeling	91.0	+ 4.0	59	101
Cleveland	86.5	— 0.5*	35	96.5
Buffalo	102.5	0	39	100
Birmingham	79.0	0	51.5	98
Cincinnati	97.0	+ 4.0*	51.5	93
St. Louis	89.0	0	82.5	93.5
Detroit	98.0	+ 3.0*	49.5	102.5
Western	94.0	+ 3.00	68	105
National Rate	88.0	+ 2.00	53.5	97

INGOT PRODUCTION‡

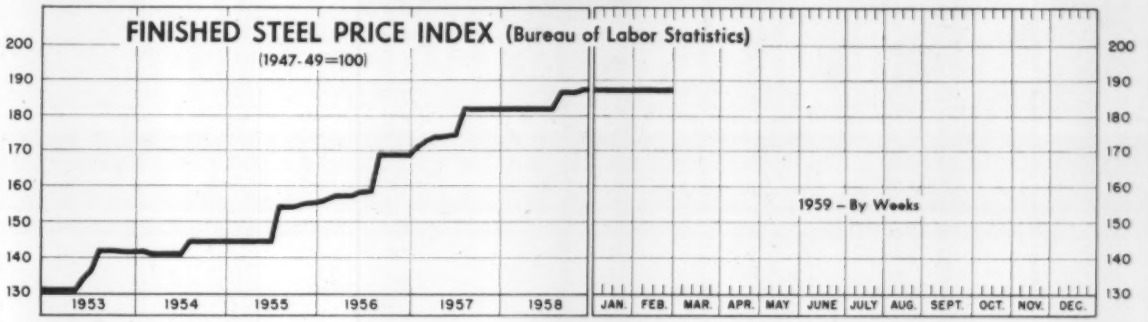
	Week Ended Mar. 1	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	154.4†	152.5	135.6	91.8
NET TONS (In thousands)	2,481†	2,449	2,178	1,475

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Feb. 24, 1959	Week Ago	Month Ago	Jan. Avg	Year Ago
187.0	187.0	187.0	187.0	181.8

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Feb. 24

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.875	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.570
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.695
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.543	Pipe, Black, Buttweld (100 ft)	19.903
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.583
		Pipe, Line (100 ft)	199.53
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.900
Tubing, Mechanical, Carbon (100 ft)	26.157	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.665
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800	Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Feb. 25 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$113.91
No. 2 Fdry, Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	42.83	42.50	41.67	37.17	25.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Feb. 25 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.10
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate (1.50 lb) box, Pitts.†	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods ⅜-⅝" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	Feb. 25 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$44.50	$43.50	$43.50	$35.50	$27.50
No. 1 Heavy Melt, E. Pa.	40.00	40.00	39.00	38.50	24.00
No. 1 Heavy Melt, Chicago	44.00	44.00	42.50	37.50	25.00
No. 1 Heavy Melt, Valley	48.50	48.50	46.50	37.50	24.50
No. 1 Heavy Melt, Cleve.	44.50	44.50	43.50	33.50	21.50
No. 1 Heavy Melt, Buffalo	41.50	41.50	35.50	28.50	25.00
Rails, Rerolling, Chicago	63.50	64.50	62.50	54.50	36.50
No. 1 Cast, Chicago	49.50	49.50	47.50	41.50	29.50

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25

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. . . hardened thread-cutting screws developed for use in friable, granular or brittle material. The pilot, with its five tapping flutes, cuts a machine screw thread as the screw is turned in. The Type F is ideal for making fastenings to ferrous and non-ferrous castings, bronze or brass forgings, heavy gage sheet metals, structural steels, plastics and resin-impregnated plywood.

2 "Pentap"... the new, Improved P-K Type B-F*

(formerly F-Z) combining the five thread-cutting flutes of the Type F screw with the coarse-pitch, widely-spaced threads of the P-K Type B. The thread-cutting "Pentap" Type B-F distributes cutting pressure evenly, lets chips drop to the bottom of the hole, and prevents cracking of material. It is designed for making fastenings to comparatively thin sections and bosses in friable and brittle plastics.

3 P-K® Type L†

. . . is a completely new and improved thread-cutting screw developed by Parker-Kalon especially for use in Nylon. The Type L functions as a combination thread-cutting and thread-forming screw in that it cuts a small amount of the Nylon to allow the full diameter threads to form. Type L offers a particular advantage in Nylon assemblies which must be disassembled for service, because *the P-K Type L can be removed and replaced without stripping or galling.*

The five cutting flutes on the new, improved P-K Type "F" and "BF" reduce pressure development by 80 percent! The completely formed threads on these screws have sharper cutting edges, and 5 deep flutes that are of continuous depth. These features make for better clearance of the accumulated material and assure minimum stresses in driving, and avoid the possibility of stripping or galling.

FOR SEMS . . . and Neoprene or Nylon washer **STAPS®** in thread-cutting and thread-forming tapping screws, or machine screws in any kind of pre-assembled fastener-washer combination, P-K can supply them, too!

KEEP AMERICAN INDUSTRY AT WORK . . . BUY P-K . . . MADE IN U.S.A.

*Patent Pending †U. S. Patent 2,350,346

FOR SAMPLES OF P-K THREAD-CUTTING SCREWS AND SEMS, CALL YOUR LOCAL P-K "BULK-STOCKING" DISTRIBUTOR

PARKER-KALON® fasteners

PARKER-KALON DIVISION, General American Transportation Corporation, Clifton, New Jersey • Offices and Warehouses in Chicago and Los Angeles

Steel Prices

Mill prices as reported to STEEL, Feb. 25, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 182, footnotes, page 184.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$76.00

INGOTS, Alloy (NT)
Detroit S41 .....$82.00
Economy,Pa. B14 .....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
Sharon,Pa. S3 .....82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 .....80.00
Buffalo R2 .....80.00
Clairton,Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 .....80.00
Fontana,Calif. K1 .....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B2 .....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 ....80.00
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$99.50
Buffalo R2 .....99.50
Canton,O. R2 .....102.00
Clairton,Pa. U5 .....99.50
Conshohocken,Pa. A3..104.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala. T2 .....99.50
Farrell,Pa. S3 .....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 .....99.50
Geneva,Utah C11 .....99.50
Houston S5 .....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2..99.50
LosAngeles B3 .....109.00
Midland,Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3 .....113.00
Sharon,Pa. S3 .....99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ..109.00
Warren,O. C17 .....99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ..$119.00
Bridgeport,Conn. C32..119.00
Buffalo R2 .....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3..126.00
Detroit S41 .....119.00
Economy,Pa. B14 ....119.00
Farrell,Pa. S3 .....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124.00
Ind.Harbor,Ind. Y1 ..119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 .....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 .....119.00
Midland,Pa. C18 .....119.00
Munhall,Pa. U5 .....119.00
Owensboro,Ky. G8 ....119.00
Sharon,Pa. S3 .....119.00
S.Chicago R2,U5,W14..119.00
S.Duquesne,Pa. U5 ..119.00
Struthers,O. Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$122.50
Canton,O. R2 .....125.00
Cleveland R2 .....122.50
Gary,Ind. U5 .....122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 .....122.50

SKELP
Aliquippa,Pa. J5 .....5.05
Munhall,Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O. R2 .....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill. L1 .....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 .....6.40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala. T2 .....6.40
Houston S5 .....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 .....6.40
Joliet,Ill. A7 .....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 .....6.40
N.Tonawanda,N.Y. B11..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 .....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Aliquippa,Pa. J5 .....5.50
Atlanta A11 .....5.70
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Houston S5 .....5.60
Ind.Harbor,Ind. I-2, Y1.5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles,Calif. P1 .....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 .....6.25
Seattle B3 .....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 .....6.15
Sterling,Ill. N15 .....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana,Calif. K1 .....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 .....5.50
Sterling,Ill. N15 .....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem,Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2 .....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1.8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
Los Angeles B3 .....8.75
Munhall,Pa. U5 .....8.05
Seattle B3 .....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Sterling,Ill. N15 .....7.75
Struthers,O. Y1 .....8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05
Sterling,Ill. N15 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 .....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 .....5.30
Ashland,Ky.(15) A10 ...5.30
Atlanta A11 .....5.30
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 .....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 .....5.30
Fairfield,Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 .....5.30
Houston S5 .....5.40
Ind.Harbor,Ind. I-2, Y1.5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 .....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1 .....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago,Ill. U5, W14..5.30
SparrowsPoint,Md. B2..5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 .....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....7.05
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa. B2 .....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 .....13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton,Pa. U5 .....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 .....7.95
Coatesville,Pa. L7 ....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 .....7.95
Ecorse,Mich. G5 .....7.95
Fairfield,Ala. T2 .....7.95
Farrell,Pa. S3 .....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 .....7.95
Geneva,Utah C11 .....7.95
Houston S5 .....8.05
Ind.Harbor,Ind. I-2, Y1.7.95
Johnstown,Pa. B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.55
Sharon,Pa. S3 .....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 .....7.95
Youngstown U5, Y1 ....7.95

PLATES, Alloy
Aliquippa,Pa. J5 .....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L7 ....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary,Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall,Pa. U5 .....7.50
Newport,Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2..7.50
Youngstown Y1 .....7.50

FLOOR PLATES
Cleveland J5 .....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ..6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
S.Chicago,Ill. U5 .....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 .....6.05
Warren,O. c.l. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa. (9) J5 ..5.675
Alton,Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ....5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich(9) G5 ....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor(9) I-2, Y1.5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 .....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..6.025
Pittsburg,Calif.(9) C11..6.375
Pittsburgh(9) J5 .....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ..5.675
Seattle B3, N14 .....6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ...5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11..6.375
Warren,O. C17 .....6.0-.5
Youngstown(9) R2, U5..5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2 .....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 .....6.725
Canton,O. R2, T7 .....6.725
Clairton,Pa. U5 .....6.725
Detroit S41 .....6.725
Economy,Pa. B14 .....6.725
Ecorse,Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2..6.725
LosAngeles B3 .....7.775
Lowellville,O. S3 .....6.725
Massillon,O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky. G8 ....6.725
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 .....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem,Pa. B2 .....8.30
Clairton,Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse,Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana,Calif. K1 .....9.00
Gary,Ind. U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 .....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 .....9.00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 .....5.775
Sterling,Ill.(1) N15 ..5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 .....6.52
Seattle B3 .....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75*

Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12 ..10.175
Camden,N.J. P13 ....10.35
Chicago W18 .....10.175
Elyria,O. W8 .....10.175
Monaca,Pa. S17 .....10.175
Newark,N.J. W18 .....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2.7.65
Birmingham C15 .....8.25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 .....7.85
Detroit S41 .....7.65
Donora,Pa. A7 .....7.65
Elyria,O. W8 .....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 .....7.65
GreenBay,Wis. F7 .....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 .....8.15
Harvey,Ill. B5 .....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2.9.10
Mansfield,Mass. B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 .....7.65
Monaca,Pa. S17 .....7.65
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 .....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 .....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Waukegan,Ill. A7 .....7.65
Willimantic,Conn. J5 ...8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. (5) C19..6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 .....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 .....9.025
Camden,N.J. P13 .....9.20
Canton,O. T7 .....9.025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 .....9.225
Detroit S41 .....9.025
Donora,Pa. A7 .....9.025
Elyria,O. W8 .....9.025
FranklinPark,Ill. N5 ..9.025
Gary,Ind. R2 .....9.025
GreenBay,Wis. F7 .....9.025
Hammond,Ind. J5, L2 ..9.025
Hartford,Conn. R2 .....9.325
Harvey,Ill. B5 .....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ...9.325
Massillon,O. R2, R8 ...9.025
Midland,Pa. C18 .....9.025
Monaca,Pa. S17 .....9.025
Newark,N.J. W18 .....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025
Waukegan,Ill. A7 .....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ...9.325
Youngstown F3, Y1 ...9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ..6.425
Fairfield Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor Ind. I-2, Y1 5.675
Johnstown Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ..5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2 W14.5.675
S.Duquesne Pa. U5 ...5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 .5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark N.J. U8 .....7.50
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings Okla. S5 ..7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ....7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt)B14 19.00
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ..19.80
McK.Rks.(Staybolt) L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Lackawanna,N.Y. B2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5 R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ...5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles O. S3 .....7.525
Pittsburgh J5 .....7.525
S Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ....7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton O R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ....6.975*
Ind.Harbor Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry O. W10 .6.875*
Middletown,O. A10 ...6.875†
Pittsburg Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin Pa. U5 .....10.125
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 ....7.50
Youngstown J5 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 ....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co., Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O1 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods, Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Corp.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.825
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2 Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	8.60
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle (25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.40
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.40
KansasCity,Mo. S5	8.65
LosAngeles B3	9.60
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5, Y1	8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland Ky A10	7.575
Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2 Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. S3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.20
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles C1, S41	9.30
McKeesport,Pa. E10	7.525
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.425
Trenton N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.55
Cleveland A7	15.55
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.55
Indianapolis S41	15.70
LosAngeles S41	17.75
Lowellville,O. S3	15.55
Pawtucket R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass.A7	15.85
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. S3	10.80
Dover,O. G6	10.80
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark.Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison N.J. C18	...	....	12.90	16.10	19.30
Indianapolis S41	....	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
New York W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark.Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
New York W3	18.85	22.95	27.80
Palmer Mass. W12	18.85	....	....
Trenton,N.J R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

Weirton, W.Va. W6	10.80
Youngstown Y1	10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.425*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
McKeesport,Pa. E10	7.50*
Riverdale,Ill. A1	7.525*
Warren O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown S41	7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint Md. B2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)

Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10
Niles,O. R2 (20-27 Ga.)	7.90	8.10

TIN PLATE, American 1.25 lb / 1.50 lb

	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless Pa. U5	10.50	10.75
Fontana,Calif.K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts. Calif C11	11.05	11.30
Sp.Pt. Md. B2	10.40	10.65
Weirton,W.Va.W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.25
Weirton W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$10.05
Irvin,Pa. U5	10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed, †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville Fla. M8	8.35
Johnstown Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	13.40
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie Ind. I-7	13.60
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth O. P12	12.65
Roebling N.J. R5	12.95
SparrowsPt.,Md. B2	13.50
Struthers,O. Y1	13.40
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven Conn. A7	10.05
Palmer,Mass. W2	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers O. Y1	9.75
Trenton N.J. A7	10.05
Waukegan Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling N.J. R5	10.05
S.Chicago, Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	16.50
Bartonville Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville,Ind. M8	16.40
Fostoria,O. S1	16.30
Houston S5	16.55
Jacksonville Fla. M8	16.65
Johnstown,Pa. B2	16.30
KansasCity,Mo. S5	16.55
Kokomo,Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen Pa. P16	16.30
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	16.30
Worcester,Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	17.15
Roebling,N.J. R5	17.65

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
Johnstown Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling N.J. R5	13.75
St. Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7, T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburgh,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ....$10.30

NAILS, Cut (100 lb keg) To Dealers (33)

Wheeling,W.Va. W10 ..$9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$9.24
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	9.34
Donora,Pa. A7	9.24
Duluth, A7	9.24
Fairfield,Ala. T2	9.24
Houston S5	10.51
Jacksonville,Fla. M8	9.34
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	9.24
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	9.34
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	9.94
S.Chicago,Ill. R2	9.24
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	9.24

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.54
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.64
Donora,Pa. A7	9.54
Duluth A7	9.54
Fairfield,Ala. T2	9.54
Houston S5	10.85
Jacksonville,Fla. M8	9.64
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	9.54
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.64
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	10.26
S.Chicago,Ill. R2	9.54
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill. (37) N15	9.54

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.59
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.69
Donora,Pa. A7	9.59
Duluth A7	9.59
Fairfield,Ala. T2	9.59
Houston S5	10.90
Jacksonville,Fla. M8	9.69
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	9.59
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	9.69
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	10.31
S.Chicago,Ill. R2	9.59
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill. (37) N15	9.59

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2.	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.75
Cleveland A7	17.85	....
Craw'dville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'im'r,Mass. W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
Sterling(37)N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality (6 to 8 gage)

	An'ld	Galv.
Ala.City,Ala. R2	9.00	9.55**
Aliquippa J5	8.65	9.35§
Atlanta(48) A11	9.10	9.775§
Bartonville(48) K4	9.10	9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	....
Crawfordsville M8	9.10	9.80‡‡
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48)	S5. 9.25	9.80**
Jack'ville,Fla. M8	9.10	9.80‡‡
Johnstown B2(48)	9.00	9.675§
Joliet,Ill. A7	9.00	9.55†
Kans.City(48)	S5. 9.25	9 80**
Kokomo(48) S16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Monessen(48) P7	8.65	9.35§
Palmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	9.95	10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
Spar'wsPt.(48)B2	9.10	9.775§
St'ling(1)(48)N15	9.00	9.70§§
Struthers,O. Y1	9.00	9.65‡
Worcester,Mass.A7	9.30	9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras. §§11.50c.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts

Full Size Body (cut thread)

½ in. and smaller:	
3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0
Longer than 6 in.	37.0
⅝ in., 3 in. & shorter	47.0
3¼ in. thru 6 in.	40.0
Longer than 6 in.	31.0
¾ in. thru 1 in.:	
6 in. and shorter	37.0
Longer than 6 in.	31.0
1¼ in. and larger:	
All lengths	31.0

Undersize Body (rolled thread)

½ in. and smaller:	
3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0

Carriage Bolts

Full Size Body (cut thread)& Undersize Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

Lag, Plow, Tap, Blank. Step, Elevator, Tire, and Fitting Up Bolts

½ in. and smaller:	
6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

High Tensile Structural Bolts

(Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM A-325, in bulk. Full keg quantity)

⅝ in. diam.	50.0
¾ in. diam.	47.0
⅞ and 1 in. diam.	43.0
1⅛ and 1¼ in. diam.	34.0

NUTS

(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:	
¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5
Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
⅞ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5
CAP AND SETSCREWS (Base discounts, packages, per cent off list, f.o.b. mill)	
Hex Head Cap Screws, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
⅝ in. and smaller	35.0
¾, ⅞, and 1 in.	16.0
Longer than 6 in.:	
⅝ in. and smaller	3.0
¾, ⅞, and 1 in.	+11.0
High Carbon, Heat Treated: 6 in. and shorter:	
⅝ in. and smaller	20.0
¾, ⅞, and 1 in.	+ 5.0
Longer than 6 in.:	
⅝ in. and smaller	+19.0
¾, ⅞, and 1 in.	+39.0
Flat Head Cap Screws: ¾ in. and smaller, 6 in. and shorter	+85.0
Setscrews, Square Head, Cup Point, Coarse Thread: Through 1 in. diam.:	
6 in. and shorter	+ 5.0
Longer than 6 in.	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in. larger 12.85

⅞ in. and smaller by 6 in. and shorter 15.0%.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$28.95	$43.40	$55.40	$73.00	$95.10
Buffalo W12	28.95	43.40	55.40	73.00	95.10
Cleveland A7	28.95	43.40	55.40	73.00	....
KansasCity,Mo. U3	32.15	48.20	61.55	81.10	105.65
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	28.95	43.40	55.40	73.00	95.10
Pittsburg,Calif. C11	....	43.40	55.40	73.00	....
Pueblo,Colo. W12	28.95	43.40	55.40	73.00	95.10
Roebling,N.J. R5	28.95	43.40	55.40	73.00	95.10
SparrowsPoint,Md. B2	28.95	43.40	55.40	73.00	95.10
St.Louis L8	28.95	43.40	55.40	73.00	95.10
Waukegan,Ill. A7	28.95	43.40	55.40	73.00	95.10

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnston,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa Colo. C10	15.35
Pittsburgh P14	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Youngstown Y1	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

ELECTR'ICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+28.75	+6.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Alton, Ill. L1	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Benwood, W. Va. W10	1.5	+27	+10.5	+36	+21	+45.5	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Butler, Pa. F6	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+28	+7.75	+24	+4.25	+19.5	+1.75	+18.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+16	4.25	+12	7.75	+7.5	10.25	+7.75
Lorain, O. N3	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sharon, Pa. S4	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sparrows Pt., Md. B2	0.5	+28	+11.5	+37	+22	+45.5	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Wheatland, Pa. W9	4.5	+24	+8.5	+34	+19.5	+44	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Alton, Ill. L1	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Benwood, W. Va. W10	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Etna, Pa. N2	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Fairless, Pa. N3	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Fontana, Calif. K1	+1.25	+17.25	+0.75	+16.75	0.75	+16.5	0.75	+16.5	+9.75	+27.5	+9.75	+27.5
Indiana Harbor, Ind. Y1	10.75	+5.25	11.25	+4.75	12.75	+4.5	12.25	+4.5	2.25	+15.5	2.25	+15.5
Lorain, O. N3	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Wheatland, Pa. W9	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Youngstown R2, Y1	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5

*Galvanized pipe discounts based on current price of zinc (11.50c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	28.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	31.50	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	29.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	32.75	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	34.00	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	34.50	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	38.25	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	39.75	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	51.25	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	63.75	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	51.25	64.50	68.50	71.75	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	62.25	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	41.50	48.75	53.50	54.50	57.50	54.75	65.50	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	22.25	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	34.75	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	22.50	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
*Copper**	$35.85	$42.50

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3, nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	W Hot Wk. (H-21)	1.425-1.44
Oil Hardening (O-1)	0.565	V-Cr Hot Work (H-13)	0.550
V-Cr Hot Work (H-11)	0.565	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.140
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Neville Island,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	66.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Managanese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24 #	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.90
Boston	9.31	10.40	11.97	53.50	9.73	10.11	13.39 #	15.71	10.01	10.02	11.85
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.50	53.00	8.51	8.99	9.15	15 05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	10.65	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.80[2]	12.15[2]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.10	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95 #	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10 15	13.00	16.00	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[2]	10.20	10.10	12.50
South'ton, Conn.	9 07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.35	11.55	12.55	57.38	10.80	11.05	14.70	16.80	10.25	10.15	13.05
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Curtner, Calif., $185; Canon City, Colo., $183.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo. $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid $25; barge, Brownsville, Tex., $27.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	23.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	22.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$11.00-$11.25*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian (export tax included) $0.95-$1 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00

South African Transvaal

44% no ratio	22.00-23.00
48% no ratio	29.00-31.00

Turkish

48% 3:1	51.00-55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish:	
98% Fe:	
F.o.b. Camden or Riverton, N. J., freight allowed east of Mississippi river, ocean bags, 23,000 lb and over	11.25
Sponge Iron, Domestic, 98% Fe:	
F.o.b. Riverton, N. J., freight allowed east of Mississippi River:	
100 mesh, 100 lb bags	11.25
100 mesh, 100 lb pails	9.10‡
40 mesh, 100 lb bags	8.10
Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron:	
98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh	
Aluminum:	
Atomized, 500-lb drum, freight allowed	
Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	33.50-49.60†
Bronze, 5000-lb lots	50.50-54.60†
Copper:	
Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese, Electrolytic:	
Minus 50 mesh	43.00
Nickel	80.60
Nickel-Silver, 5000-lb lots	51.60-56.00†
Phosphor-Copper, 5000-lb lots	62.80
Copper (atomized) 5000-lb lots	43.30-51.80†
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20‡
Tungsten:	Dollars
Carbon reduced, 98.8% min, minus 65 mesh	nom.**
1000 lb	2.80
less 1000 lb	2.95
Chromium, electrolytic 99.8% Cr, min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scarfing grade. **Depending on price of ore.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Diam (Inches)	Length (Inches)	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5⅛	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
14	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens:	
New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.50
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal., f.o.b. tank cars or tank trucks, plant.	
Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	22.00
Naphthalene, 78 deg	5.00
Toluene, one deg (del. east of Rockies)	25.00
Cents per lb, f.o.b. tank cars or tank trucks, del.	
Phenol, 90 per cent grade	15.50
Per net ton bulk, f.o.b. cars or trucks, plant	
Ammonium sulfate, regular grade	$32.00

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.40	$5.40	$5.30	$5.75
Bar Size Angles	5.10	5.10	5.00	5.43
Structural Angles	5.10	5.10	4.90	5.43
I-Beams	5.06	5.06	4.96	5.40
Channels	5.06	5.06	4.96	5.40
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.76	25.64	25.64	26.51
Barbed Wire (†)	6.60	6.60	6.60	6.95
Merchant Bars	5.40	5.40	5.35	5.90
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.19	5.32	5.14	5.49
Wire Rods, O.H. Cold Heading Quality No. 5	5.09	6.22	6.04	6.34
Bright Common Wire Nails (§)	7.89	7.75	7.67	8.26

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.006% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, carload 45.75c, ton lot 47.25c, less ton lot. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c, less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 24.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Contract, carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lots $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ¼-in. x 12 M 20 00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

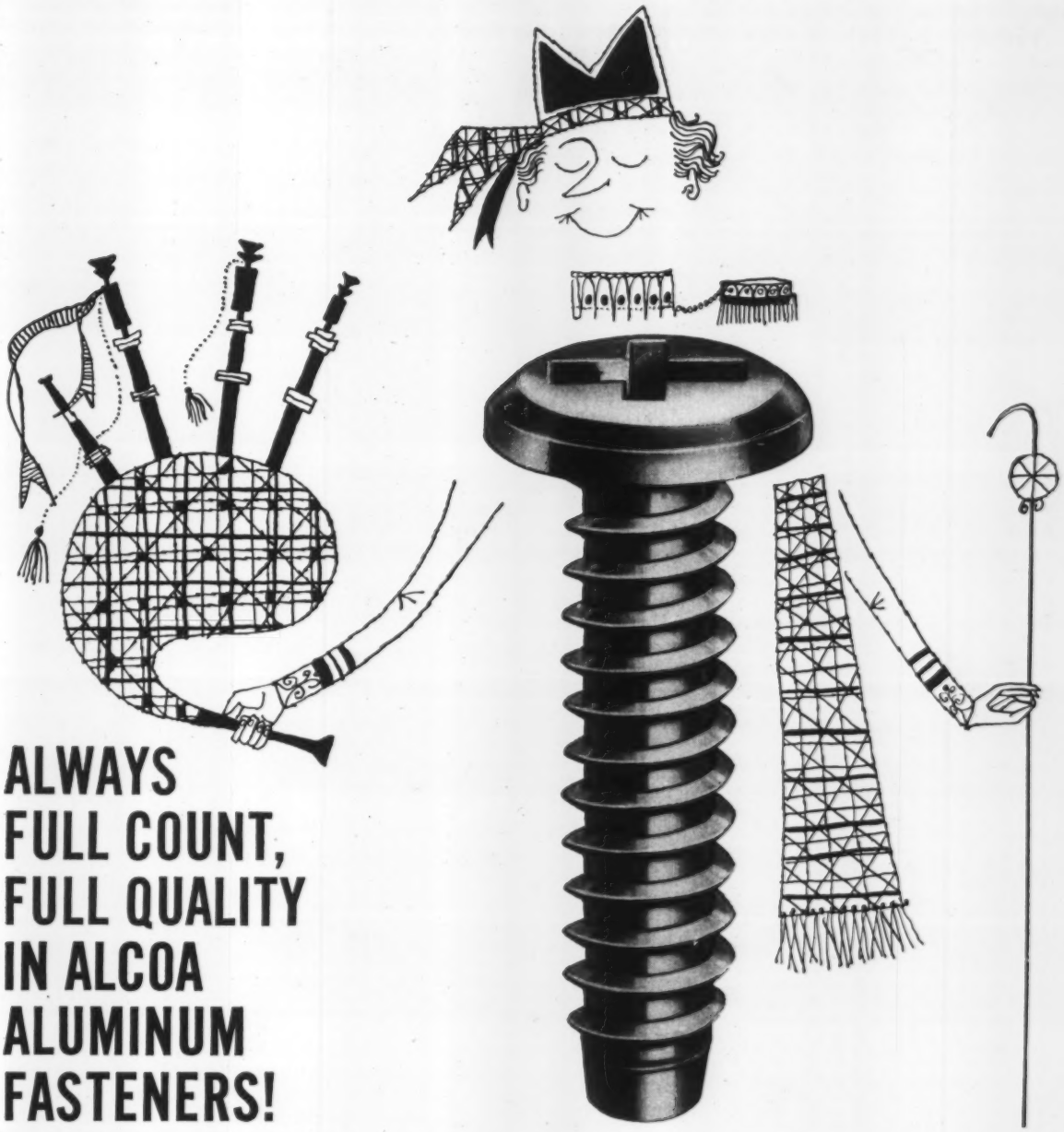
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.



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Steel Rate Rise Bolsters Scrap

STEEL's composite on No. 1 heavy melting steel advances 33 cents to $42.83 despite continued absence of active demand. Exports are helping the market sentiment

Scrap Prices, Page 192

Pittsburgh — District steelmaking operations are at the highest level (87 per cent of capacity) since July, 1957, but the mills are showing little interest in scrap. Brokers expect one of the big consumers to place an order soon. Prices are firm.

New York—The local market has a strong undertone. Demand is expanding, on both domestic and export account. The movement abroad is principally to Japan and Spain.

Brokers have advanced their buying prices on most carbon steel grades about $1 a ton. They are quoting $31-$32 for No. 1 heavy melting and No. 1 bundles and $28-$29 for No. 2 heavy melting. No. 2 bundles are unchanged at $19-$20.

Machine shop turnings are higher at $12-$13, mixed borings and turnings at $15-$16, short shoveling turnings at $16-$17, and low phos structurals and plate at $35-$36.

The cast iron grades are steady, but stainless scrap specialties are stronger with 18-8 sheets quoted $195-$200 and type 430 sheets, $90-$95. There's no change in 18-8 borings and turnings and type 410 material.

Chicago—Steel production in this district is at its highest level since the start of 1957, but it is having little effect on the scrap market. At the moment, the market appears slightly weaker. Mills are buying sparingly. They hold substantial inventories and are relying heavily on hot metal. Four district blast furnaces are still idle, and they are likely to be blown in before scrap volume increases. Cast iron scrap continues in strong demand as gray iron foundry activity picks up moderately.

Philadelphia — Prices are firm. Business is good, and dealers are optimistic. One reason: Scrap delivered at Port Richmond for export is bringing better prices than that delivered at domestic mills. If there is any slackening, exports will help fill the gap.

Cleveland — Month-end automotive lists will set the market pace for March. Dealers are holding to their quoted prices despite the absence of active demand for open market scrap. Strong steelmaking rates (86.5 per cent in Cleveland and 88 per cent in the Valley) serve to encourage the hope of early active buying by the mills. Heavy use of blast furnace hot metal is holding down the scrap to pig iron ratio in open hearth furnace charges.

Detroit—The feeling is that the movement in prices (up or down) will be less than $2 after auto lists close this week. Brokers and dealers report a quiet market; with buying absent, prices are on the soft side.

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McLouth Steel is expected to do little buying this month because it has built up a backlog since strikes closed the works down for a week in February. Other mills in the area know there will be plenty of scrap available and won't be compelled to rush into the market. They are placing orders as the market trend turns to their advantage.

St. Louis—Prices are unchanged, but the market appears to be weakening. Dealers say supplies are more than adequate for demand, with the mills using more hot metal.

Buffalo — Higher prices have brought out a heavy flow of scrap, and local mills are now well supplied. Most observers think the market has reached a plateau, and dealers are not speculating by holding back tonnage.

In view of the strong movement of scrap last month, there is a growing feeling that the mills will be able to buy March tonnage at prevailing prices. Few anticipate a further price increase now.

Local mills are operating above capacity levels. They are using substantial scrap tonnage, giving dealers their best run of business in more than a year.

Youngstown—Dealers are marking time pending developments in the current steel buying rush. The mills are loaded with orders for steel, but they are inclined to maintain open hearth charges on a high percentage of hot metal. Scrap prices are still considered beyond the point where it would be more economical to increase the scrap charge in the steel melt.

No important orders have developed here since one mill recently paid $48 for No. 1 dealer scrap, and another paid $50 for industrial material.

Houston—Brokers' buying prices are unchanged here in a slow market. The leading mill holds a large inventory. It indicates it will move slowly in formulating its March scrap buying program. The other Texas mill raised prices in mid-February and is receiving speeded shipments. Export buying is holding with $37 quoted top on No. 1 heavy melting steel. Texas border scrap is moving south on relatively strong Mexican prices.

Birmingham — While the scrap movement continues slow, Atlantic Steel Co., Atlanta, has resumed operations after a three-month strike shutdown. It is offering $2 a ton more for heavy melting steel than it paid just before the strike.

Most Alabama consumers appear to be adequately supplied. The ingot rate is holding around 79 per cent of capacity.

The export market is more active. Prices at Mobile, Ala., and New Orleans are reported higher at $39 f.a.s. for No. 1, and $35 for No. 2 steel.

Los Angeles—Japanese demand is expected to prop prices in this area. Increased domestic mill interest, and slow collections due to adverse weather conditions, also are serving to firm up the market. Heavier mill buying is thought to be in prospect despite their substantial inventories.

Portland, Oreg.—Yard operators are optimistic, although demand continues slow, and prices are nominal. The market outlook is considered promising, especially on export account.

Yard stocks are down. It's said that to attract shipments from the interior, some coast buyers are offering premium prices and are absorbing some freight.

Cincinnati—Local mills are expected to enter the market shortly, and prices could quickly take an upward turn, or slip backward, as much as $1 a ton. Brokers say the mills haven't indicated any eagerness to acquire tonnage despite strong steel operating rates.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4400 tons, office building, Uris Bros. (owners and builders), 350 Park Ave., New York, to Harris Structural Steel Co., New York.

3200 tons, addition, Fox Department Store, Hartford, Conn., to Lehigh Structural Steel Co., Allentown, Pa.; Turner Construction Co., New York, general contractor.

1600 tons, office building, First National Bank, Hartford, Conn., to Topper & Griggs (Bethlehem Fabricators Inc.), Hartford, Conn.

1370 tons, municipal bus garage, Queens, N. Y., through Melnick & Co., to Bethlehem Fabricators, Bethlehem, Pa.

1250 tons, 13-span composite, wide flange beam bridge, Winooski River, Montpelier, Vt., to the American Bridge Div., U. S. Steel Corp., Pittsburgh; E. D. Swett Inc., Pembroke, N. H., general contractor.

300 tons, trashracks, hoists and other facilities, Rocky Reach Dam, Washington State, to Monarch Forge & Machine Works, Portland, Oreg., low at $184,606, to Chelan County P.U.D., Wenatchee, Wash.

650 tons, Public School No. 5, Bronx, N. Y., to Bethlehem Fabricators, Bethlehem, Pa.

555 tons, state highwaywork, Brooklyn, N. Y., to Pine Brook Iron Works, Scranton, Pa.

500 tons, galvanized transmission towers for Pacific Power & Light Co., Portland, Oreg., to Bethlehem Pacific Coast Steel Corp., Seattle.

430 tons, two state bridges, Rehoboth, Mass., to Tower Iron Works, Providence, R. I.; Campanella & Cardi Construction Co. Inc., general contractor.

345 tons, four-span rolled beam bridge, East Hartford, Conn., to Standard Structural Steel Co., Hartford, Conn.; White Oak Excavators Inc., Plainville, Conn., general contractor.

250 tons, readiness crew building, Dow AFB, Bangor, Maine, to Hussey Mfg. Co., North Berwick, Maine, and magazine, Progressive Iron Works, Bangor; Consolidated Constructors Inc., Portland, Maine, general contractor.

235 tons, service club and shop buildings, Westover AFB, Chicopee Falls, Mass., to Haarmann Structural Steel Co., Holyoke, Mass.; Davison Construction Co. Inc., Manchester, N. H., general contractor; also, 50 tons of concrete reinforcing bars to Bethlehem Steel Co., Boston.

215 tons, 3-span, wide flange beam bridge, Berlin-Montpelier, Vt., to Vermont Structural Steel Co., Burlington, Vt.; S. V. Rossi Construction Co., Torrington, Conn., general contractor.

200 tons, plywood plant, Albany, Oreg., to

(*Please turn to page* 197)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Feb. 25, 1959. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Feb. 25	$42.83
Feb. 18	42.50
Jan. Avg.	40.58
Feb. 1958	37.33
Feb. 1954	26.91

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*44.00-45.00*
No. 2 heavy melting	35.00-36.00
No. 1 dealer bundles	44.00-45.00
No. 2 bundles	32.00-33.00
No. 1 busheling	*44.00-45.00*
No. 1 factory bundles	53.00-54.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	26.00-27.00
Cast iron borings	26.00-27.00
Cut structurals:	
2 ft and under	51.00-52.00
3 ft lengths	50.00-51.00
Heavy turnings	36.00-37.00
Punchings & plate scrap	53.00-54.00
Electric furnace bundles	53.00-54.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
Rails, 2 ft and under	59.00-60.00
Rails, 18 in. and under	60.00-61.00
Random rails	56.00-57.00
Railroad specialties	54.00-55.00
Angles, splice bars	54.00-55.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	120.00-125.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	45.00-46.00
No. 1 hvy melt, dealer	42.00-43.00
No. 2 heavy melting	37.00-38.00
No. 1 factory bundles	48.00-49.00
No. 1 dealer bundles	44.00-45.00
No. 2 bundles	31.00-32.00
No. 1 busheling, indus.	45.00-46.00
No. 1 busheling, dealer	42.00-43.00
Machine shop turnings	24.00-25.00
Mixed borings, turnings	26.00-27.00
Short shovel turnings	26.00-27.00
Cast iron borings	26.00-27.00
Cut structurals, 3 ft	50.00-51.00
Punchings & plate scrap	51.00-52.00

Cast Iron Grades

No. 1 cupola	49.00-50.00
Stove plate	45.00-46.00
Unstripped motor blocks	39.00-40.00
Clean auto cast	57.00-58.00
Drop broken machinery	57.00-58.00

Railroad Scrap

No. 1 R.R. heavy melt	47.00-48.00
R.R. malleable	59.00-60.00
Rails, 2 ft and under	61.00-62.00
Rails, 18 in. and under	62.00-63.00
Angles, splice bars	55.00-56.00
Axles	72.00-73.00
Rails, rerolling	*63.00-64.00*

Stainless Steel Scrap

18-8 bundles & solids	215.00-225.00
18-8 turnings	120.00-125.00
430 bundles & solids	115.00-120.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	48.00-49.00
No. 2 heavy melting	35.00-36.00
No. 1 busheling	48.00-49.00
No. 1 bundles	48.00-49.00
No. 2 bundles	33.00-34.00
Machine shop turnings	20.00-21.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Low phos.	49.00-50.00
Electric furnace bundles	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00

*Nominal

CLEVELAND

No. 1 heavy melting	44.00-45.00
No. 2 heavy melting	30.00-31.00
No. 1 factory bundles	48.00-49.00
No. 1 bundles	44.00-45.00
No. 2 bundles	31.00-32.00
No. 1 busheling	44.00-45.00
Machine shop turnings	17.00-18.00
Short shovel turnings	23.00-24.00
Mixed borings, turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut foundry steel	44.00-45.00
Cut structurals, plates 2 ft and under	51.00-52.00
Low phos, punchings & plate	45.00-46.00
Alloy free, short shovel turnings	25.00-26.00
Electric furnace bundles	45.00-46.00

Cast Iron Grades

No. 1 cupola	50.00-51.00
Charging box cast	41.00-42.00*
Heavy breakable cast	41.00-42.00
Stove plate	47.00-48.00
Unstripped motor blocks	36.00-37.00
Brake shoes	39.00-40.00
Clean auto cast	50.00-51.00
Burnt cast	40.00-41.00
Drop broken machinery	53.00-54.00

Railroad Scrap

R.R. malleable	66.00-67.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Rails, random lengths	55.00-56.00
Cast steel	52.00-53.00
Railroad specialties	53.00-54.00
Uncut tires	46.00-47.00
Angles, splice bars	54.00-55.00
Rails, rerolling	59.00-60.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	120.00-125.00
430 clips, bundles, solids	115.00-125.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	37.00
No. 2 heavy melting	35.00
No. 1 bundles	39.00
No. 2 bundles	28.00
No. 1 busheling	39.00
Machine shop turnings	21.00
Short shovel turnings	23.00

Cast Iron Grades

No. 1 cupola	50.00
Charging box cast	40.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	50.00
Stove plate	45.00

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00*
Rails, 18 in. and under	53.00
Rails, random lengths	48.50
Rails, rerolling	*60.00*
Angles, splice bars	49.00

BIRMINGHAM

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	33.00-34.00
No. 2 bundles	23.00-24.00
No. 1 busheling	33.00-34.00
Cast iron borings	14.00-15.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	*44.00-45.00*
Structurals & plates	*43.00-44.00*
Electric furnace bundles	39.00-40.00
Electric furnace: 2 ft and under	37.00-38.00
3 ft and under	36.00-37.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	40.00-41.00
No. 1 wheels	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 18 in. and under	51.00-52.00
Rails, rerolling	*57.00-58.00*
Rails, random lengths	*45.00-46.00*
Angles, splice bars	44.00-45.00

PHILADELPHIA

No. 1 heavy melting	40.00
No. 2 heavy melting	37.00
No. 1 bundles	41.00
No. 2 bundles	26.00-27.00
No. 1 busheling	41.00
Electric furnace bundles	42.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	26.00-27.00
Machine shop turnings	22.00-23.00
Heavy turnings	36.00-37.00
Structurals & plate	44.00-45.00
Couplers, springs, wheels	46.00
Rail crops, 2 ft & under	59.00-60.00

Cast Iron Grades

No. 1 cupola	39.00-43.00
Heavy breakable cast	43.00
Malleable	68.00
Drop broken machinery	49.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	*28.00-29.00*
No. 1 bundles	*31.00-32.00*
No. 2 bundles	19.00-20.00
Machine shop turnings	*12.00-13.00*
Mixed borings, turnings	*15.00-16.00*
Short shovel turnings	*16.00-17.00*
Low phos. (structurals & plates)	*35.00-36.00*

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	*195.00-200.00*
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	*90.00-95.00*

BUFFALO

No. 1 heavy melting	41.00-42.00
No. 2 heavy melting	34.00-35.00
No. 1 bundles	41.00-42.00
No. 2 bundles	29.00-30.00
No. 1 busheling	41.00-42.00
Mixed borings, turnings	21.00-22.00
Machine shop turnings	19.00-20.00
Short shovel turnings	23.00-24.00
Cast iron borings	21.00-22.00
Low phos. structurals and plate, 2 ft and under	49.00-50.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	46.00-47.00
No. 1 machinery	50.00-51.00

Railroad Scrap

Rails, random lengths	51.00-52.00
Rails, 3 ft and under	57.00-58.00
Railroad specialties	50.00-51.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	34.50-35.50
No. 1 bundles	39.50-40.50
No. 2 bundles	26.00-27.00
No. 1 busheling	39.50-40.50
Machine shop turnings	19.00-20.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	22.00-23.00
Cast iron borings	20.00-21.00
Low phos., 18 in.	47.00-48.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	40.00-41.00
Charging box cast	38.00-39.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	50.00-51.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	35.00
No. 2 heavy melting	32.00
No. 1 bundles	35.00
No. 2 bundles	22.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	42.00

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable	27.00-28.00†
Foundry malleable	37.00
Unstripped motor blocks	34.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	31.00-31.50
No. 2 heavy melting	23.00-23.50
No. 1 bundles	31.00-31.50
No. 1 busheling	31.00-31.50
Machine shop turnings	11.00-11.50
Short shovel turnings	13.00-13.50
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.00-39.00
No. 2 heavy melting	23.00-24.00
No. 1 bundles	39.00-40.00
No. 2 bundles	24.50-25.50
No. 1 busheling	38.00-39.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	16.00-17.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	33.00-34.00
Charging box cast	33.00-34.00
Heavy breakable	35.00-36.00
Unstripped motor blocks	22.00-23.00
Clean auto cast	47.00-48.00

SEATTLE

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 1 bundles	29.00
No. 2 bundles	23.00
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	36.00
No. 2 heavy melting	34.00
No. 1 bundles	33.00
No. 2 bundles	18.00
Machine shop turnings	15.00
Shoveling turnings	18.00
Cast iron borings	15.00
Cut structurals and plate 1 ft and under	47.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

SAN FRANCISCO

No. 1 heavy melting	32.00-34.00
No. 2 heavy melting	30.00-32.00
No. 1 bundles	30.00-32.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices)

No. 1 heavy melting	34.50
No. 2 heavy melting	30.50
No. 1 bundles	34.50
No. 2 bundles	25.00
Mixed steel scrap	26.50
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	34.50
Unprepared	28.50
Short steel turnings	19.00

Cast Iron Grades‡

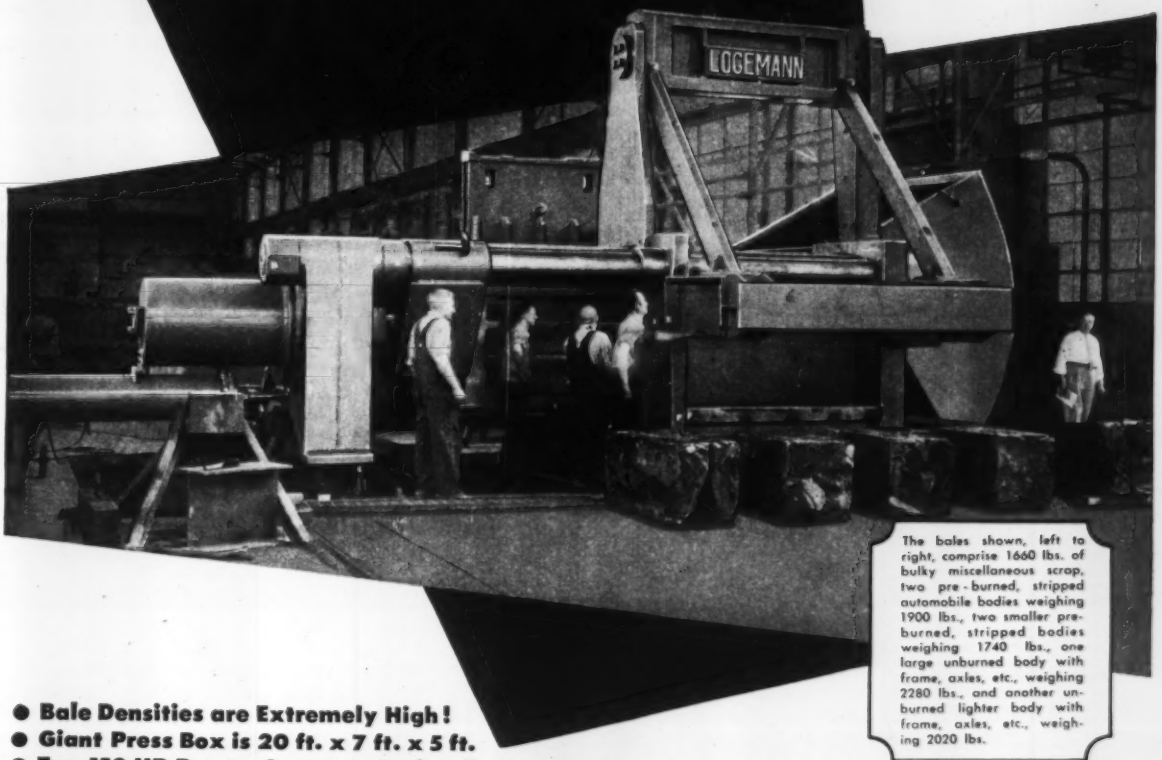
No. 1 machinery cast	39.00-41.00

†Nominal.
‡F.o.b. Hamilton, Ont.

LOGEMANN *presents*

the new giant triple-compression 4000-P Series of

SCRAP PRESSES



The bales shown, left to right, comprise 1660 lbs. of bulky miscellaneous scrap, two pre-burned, stripped automobile bodies weighing 1900 lbs., two smaller pre-burned, stripped bodies weighing 1740 lbs., one large unburned body with frame, axles, etc., weighing 2280 lbs., and another unburned lighter body with frame, axles, etc., weighing 2020 lbs.

- **Bale Densities are Extremely High!**
- **Giant Press Box is 20 ft. x 7 ft. x 5 ft.**
- **Two 150 HP Pumps Generate Hydraulic Pressure**

In this Logemann Scrap Press compressed bales measure 24 inches by 24 inches by a variable third dimension which is determined by the character and quantity of scrap charged. The first or gathering ram compresses the load of scrap from 20 ft. to 2 ft. . . . the intermediate side ram reduces the cross-dimension from 7 ft to 2 ft. . . . finally the third or finishing ram moves upward, to compress the vertical dimension into an extremely dense bale, ready for remelting. The cover is then withdrawn and the finishing ram elevates the compressed bale level with the top of the box, to allow the cover to push it off for loading into cars.

Two large 150 HP pumps generate hydraulic pressure for operating the press-rams at high pressures. Three smaller pumps are used to operate the press cover and the loading hopper. This hopper can be filled with miscellaneous scrap while the press is making a bale, and then dumped quickly into the box as soon as the preceding bale has been discharged.

The large pumps give rapid movement to all rams, and to handle their fluid delivery the operating-valves are proportionately over-size. These valves are operated by compressed air and easily controlled from a remote stand, through a bank of electrical switches and push-buttons, in front of the operator.

This same press can be used for baling bodies and extremely bulky scrap, also for making standard size, high-density bales of new sheet clips.

We are prepared to build many smaller sizes or larger, if required, to meet your specific requirements. You are invited to present your problem for discussion.

Write for details about the newly developed 3500-P series with tamping cover and side bale ejection and the new giant double compression press with box 20 ft. long, 7½ ft. wide, and 5 ft. deep.

LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 10, WISCONSIN

First Quarter Sales Spotty

Demand is generally much better than it was a year ago, but most producers still have their problems. Sales slump pulls lead, zinc prices down to 11 cents a pound

Nonferrous Metal Prices, Pages 196 & 197

AS 1959's first quarter enters the home stretch, it shapes up like this: Demand for major nonferrous metals isn't running as hard as some prognosticators believed it would. Neither has the recovery fizzled out as others predicted.

Sales are spotty. Business continues at a gallop for some metals. Others can't seem to get started. Conditions aren't likely to change appreciably this month.

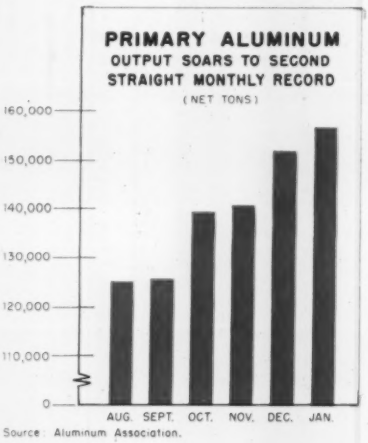
• **Copper**—While producers aren't being overwhelmed with orders, demand is strong and continuous enough to keep the red metal in tight supply. The two major copper consumers, brass and wire mills, are running at a good clip, and evidence seems to be mounting that some customers are laying in inventories as a hedge against a possible summer strike at domestic mines and refineries.

Custom smelters boosted their quotation another half cent to 31 cents a pound on Feb. 24. The move was spurred by rising world prices and a shortage of salable metal brought on by the tightness in the scrap market. Custom copper could go higher in the near future.

• **Aluminum**—Demand is fair but probably disappointing to some industry sales forecasters. But the situation hasn't dimmed the industry's long range sales analysis. For instance, Walter L. Rice, vice president of Reynolds Metals Co., says consumption projections by his company indicate U. S. usage will climb to 10 million tons by 1975 (about five times present use).

Things aren't so rosy now. January marked the second month in a row that primary output hit an all-time high (see chart). Business isn't good enough to support this high production level—especially when you consider that "put rights" to the government, which took 330,000 tons of metals in 1958, will "consume" less than 25 per cent that much this year. It appears that output will either have to be cut back or stocks will build up to high levels.

• **Lead**—The continued depressed state of lead is illustrated by two recent developments: 1. The price was cut 0.5 cent to 11 cents a pound on Feb. 24. It marks the third drop since the first of the year when the metal was selling for 13 cents a pound. 2. The nation's top producer, St. Joseph Lead Co., cut all its mining and milling operations to a four day workweek.



Source: Aluminum Association.

Last year, U. S. mines produced 266,000 tons of recoverable lead, the lowest annual output since 1899. Producers were encouraged by a sharp sales uptrend in the fall and stepped up operations. But the pace has not been maintained in 1959. The situation is causing a return to the 1958 operating rate.

Look for more price weakness unless demand picks up.

• **Zinc**—A day after the lead price dropped, a leading custom smelter caught the trade by surprise with a similar reduction in zinc to 11 cents a pound. Reason: A dip in demand with a resultant buildup in stocks.

Sales continued to slump throughout February. The two chief consumers, diecasters and galvanizers, have been taking less metal. However, producers expect a rebound as last year's fourth quarter inventories are worked off.

Magnesium Takes to Space

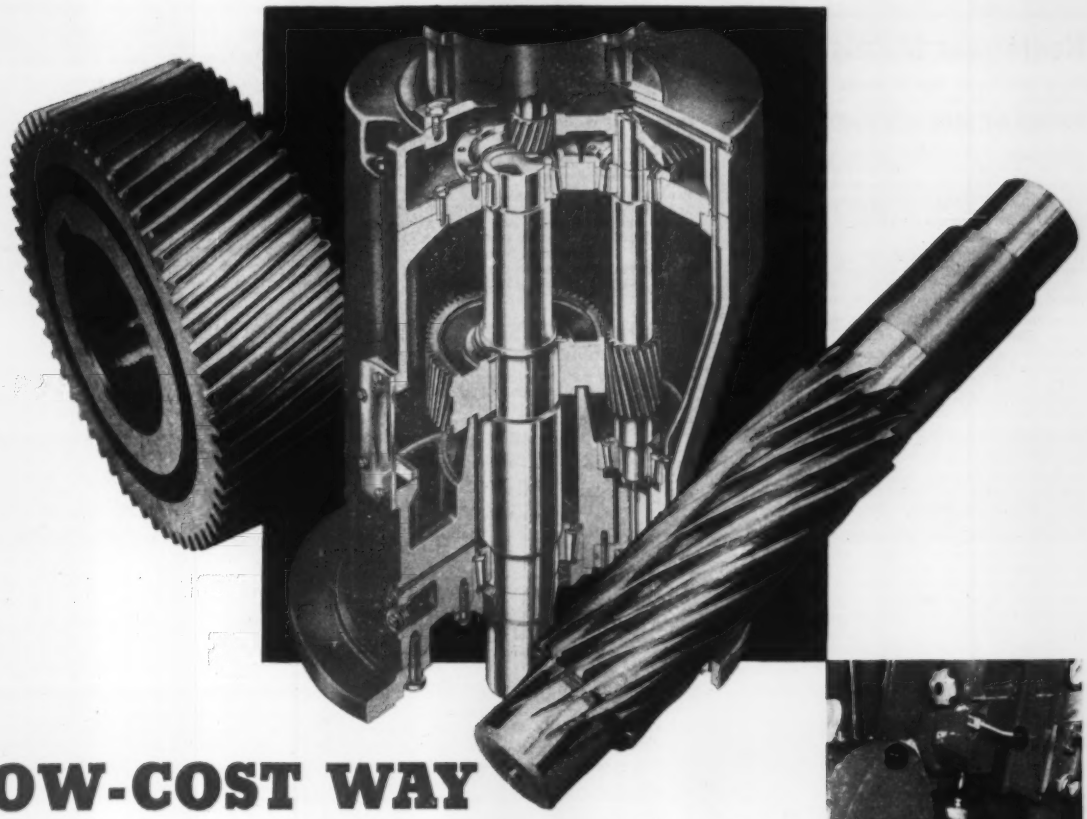
The Vanguard weather satellite now circling the earth has a skin, internal framework, and an instrument can fabricated entirely from magnesium. Out of its total weight of 21 lb, 5 lb are magnesium; the rest is instrument payload.

Three other Vanguard satellites fabricated from magnesium are scheduled to be shot into orbit this year: 1. One to study the earth's magnetism. 2. One to study cosmic rays. 3. A more complicated weather satellite that weighs 50 lb.

NONFERROUS PRICE RECORD

	Price Feb. 25	Last Change	Previous Price	Jan. Avg	Dec., 1958 Avg	Feb., 1958 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	26.000
Copper	30.00–31.00	Feb. 24, 1959	30.00–30.50	29.212	28.856	24.298
Lead	11.00	Feb. 24, 1959	11.50	12.415	12.800	12.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	104.75	Feb. 25, 1959	104.00	99.409	99.019	93.818
Zinc	11.00	Feb. 25, 1959	11.50	11.500	11.500	10.000

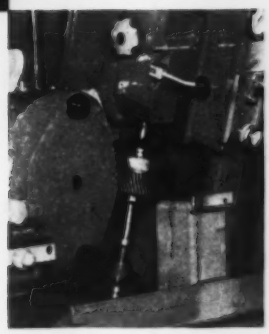
Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.



LOW-COST WAY to Quieter Gears

Finishing power transmission gears to tolerances measured in "tenths" used to be costly. But not any more: they can now be ground on the No. 12 Fellows-Reishauer Gear Grinding Machine which combines low-cost, high-speed operation with outstanding accuracy. As a result, these heavy-duty industrial mixers now run more smoothly and efficiently than was ever possible before.

The Fellows-Reishauer is built in America by Fellows, under a license from Switzerland's Reishauer Tool Works, Ltd. Fast and simple to set up, it permits economical grinding of single gears as well as long production runs. Capacities are 12" outside diameter for both spur and helical gears; 6¾" face width for spurs. Max. face width for helicals depends on pitch and helix angle.



Gears for a well-known line of industrial mixers are ground to runout tolerance of 0.0005" T.I.R. at high speed and low cost.

Fellows gear production and inspection equipment can probably help you lower your gear production costs, whatever your requirements. The complete line, for gears from 1/16" to 120" P.D., includes Fellows Gear Shapers, Pfauter Gear Hobbers and Fellows-Reishauer Gear Grinders as well as a number of other more specialized machines. For full information, get in touch with any Fellows office.

THE FELLOWS GEAR SHAPER COMPANY
78 River Street, Springfield, Vermont
Branch Offices:
1048 North Woodward Ave., Royal Oak, Mich.
150 West Pleasant Avenue, Maywood, N.J.
5835 West North Avenue, Chicago 39
6214 West Manchester Ave., Los Angeles 45

THE PRECISION LINE

Fellows *Gear Production Equipment*

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.

Cobalt: 97.99%, $1.75 per lb for 500-lb keg; $1.77 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 30.00 deld.; custom smelters, 31.00; lake, 30.00 deld.; fire refined, 29.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 nom. per troy oz.

Lead: Common, 10.80; chemical, 10.90; corroding, 10.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, 9Z91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $218-221 per 76 lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., incluing import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $16-18 per troy oz.

Platinum: $67-70 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 90.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y. spot and prompt, 104.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 13.75; No. 5, 14.00 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy, 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.50; grade 2, 22.00; grade 3, 21.00; grade 4, 19.00.

Brass Ingot: Red brass, No. 115, 30.00; tin bronze, No. 225, 40.50; No. 245, 34.25; high-leaded tin bronze, No. 305, 34.25; No. 1 yellow, No. 405, 24.50; manganese bronze, No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.895, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.875, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 35.35; l.c.l., 35.95. Weatherproof, 20,000-lb lots, 36.29; l.c.l., 37.04.

LEAD

(Prices to jobbers, f.o.b. Bufalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.50 per cwt; pipe, full coils, $16.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.50-17.00; sheared mill plate, $5.25-10.00; wire, $5.75-10.00; forging billets, $3.55-5.75; hot-rolled and forged bars, $4.25-7.50.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	....
0.136-0.096	43.20-48.30	....
0.126-0.103	....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	....
0.077-0.061	....	39.50-40.70
0.068-0.061	44.30-52.20	....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61 20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59 70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57 30	56.10	61.50	58.30
1.350	57 30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	56 00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53 50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¼ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, .25-30 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 25.00-26.00; No. 2 heavy copper and wire, 23.00-24.00; light copper, 20.75-21.75; No. 1 composition red brass, 18.75-19.25; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 30.00c)			
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	54.13b	51.36c	....	54.32	26.000	26.000	25.250
Yellow Brass	47.40	31.99d	47.94	50.81	19.750	19.000	18.000
Low Brass, 80%	50.13	50.07	50.67	53.44	22.125	21.875	21.375
Red Brass, 85%	51.09	51.03	51.63	54.40	23.000	22.750	22.250
Com. Bronze, 90%	52.60	52.54	53.14	55.66	23.875	23.625	23.125
Manganese Bronze	55.82	49.42	59.92	....	18.375	18.125	17.625
Muntz Metal	50.15	45.46	....	....	18.625	18.375	17.825
Naval Brass	52 08	45.89	58.64	54.49	18.375	18.125	17.625
Silicon Bronze	59.23	58.42	58.77	61.23	25.500	25.250	24.500
Nickel Silver, 10%	62.97	65.29	65.29	....	24.625	24.375	12.312
Phos. Bronze	73.82	74.32	74.32	75.50	27.000	26.750	24.750

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 17.75-18.25; new brass clippings, 16.50-17.00; light brass, 12.50-13.00; heavy yellow brass, 13.50-14.00; new brass rod ends, 14.50-15.00; auto radiators, unsweated, 14.50-15.00; cocks and faucets, 15.00-15.50; brass pipe, 15.25-15.75.

Lead: Heavy, 6.50-6.75; battery plates, 2.00; linotype and stereotype, 8.50-9.00; electrotype, 7.00-7.50; mixed babbitt, 9.25-9.75.

Monel: Clippings, 28.50-29.50; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 38.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 3.50-3.75; new diecast scrap, 3.25-3.50; old diecast scrap, 2.00-2.25.

Aluminum: Old castings and sheets, 9.75-10.25; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.75-12.25; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 15.75-16.25; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.00-10.50; clean borings and turnings, 9.00-9.50; segregated low copper clips, 14.00-14.50; segregated high copper clips, 12.50-13.00; mixed low copper clips, 13.00-13.50; mixed high copper clips, 12 00-12.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 56.00; light scrap, 51.00; turnings and borings, 35.00.

Copper and Brass: No. 1 heavy copper and wire, 27.50; No. 2 heavy copper and wire, 25.75; light copper, 23.50; refinery brass (60% copper) per dry copper content, 25.00.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 27.50; No. 2 heavy copper and wire, 25.75; light copper, 23.50; No. 1 composition borings, 21.50; No. 1 composition solids, 22.00; heavy yellow brass solids, 15.50; yellow brass turnings, 14.50; radiators, 17.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45. **Copper:** Flat-rolled, 46.29; oval, 44.50 5000-10,000 lb; electrodeposited, 39.50, 2000-5000 lb lots; cast, 42.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 122.50; 200-499 lb, 121.00; 500-999 lb, 120.50; 1000 lb or more, 120.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums. **Chromic Acid (flake):** 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 15.65; 2000-5900 lb, 13.65; 6000-11,900 lb, 13.40; 12,000-22,900 lb, 13.15; 23,000 lb or more, 11.90.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb 42 00; 400-4900 lb, 40 00; 5000-9900 lb, 38.00; 10 000 lb or more, 37.00.

Nickel Sulphate: 5000-22 999 lb, 29.00; 23,000-39,990 lb 28.50; 40 000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19 80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 80.60; 100-600 lb, 71.20; 700-1900 lb, 68.40; 2000-9900 lb, 66.60; 10,000 lb or more, 65.20.

Stannous Chloride (Anhydrous): 25 lb, 156.20; 100 lb, 151.40; 400 lb, 148.90; 800-19,900 lb, 108.00; 20,000 lb or more, 102.00.

Stannous Sulphate: Less than 50 lb, 141.30; 50 lb, 111.30; 100-1900 lb, 109.30; 2000 lb or more, 107.30.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 191)

Bethlehem Pacific Coast Steel Corp., Seattle.

190 tons, including 105 tons of concrete reinforcing bars, 295 ft steel bridge, Falmouth, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; W. H. Hinman Inc., Westbrook, Maine, general contractor.

110 tons, powerhouse, state hospital, Bronx, N. Y., through Braberman Construction Co. Inc., Brooklyn, N. Y., to Elizabeth Iron Works, Union, N. J.

105 tons, state highway bridge, Vernon, Conn., to McDermott Steel Specialties Co., Hartford, Conn.; Della-Bitta-Basola Inc., Milldale, Conn., general contractor.

STRUCTURAL STEEL PENDING

5000 tons, cantilever superstructure, Port Mann bridge, Fraser River, British Columbia; bids expected to be called within 90 days; plans by C.B.A. Engineers Ltd., Vancouver, B. C.

1025 tons, gates, fishway, ladders, etc., Ice Harbor Dam, Snake River; bids to U. S. Engineer, Walla Walla, Wash., about Apr. 30.

1000 tons, state expressway, Queens, N. Y.; bids closed.

900 tons, switchyard structures, Lewiston, N. Y., Niagara power project, bids March 5 to the Power Authority of the State of New York.

700 tons, second Lake Washington floating bridge, Seattle; bids to Olympia, Wash., advanced to Mar. 24.

513 tons, state bridgework, Essex County, N. J., bids March 12; also, 111 tons of reinforcing steel required.

430 tons, bridge, Woonsocket, R. I.; Consolidated Constructors Inc., Attleboro, Mass., general contractor.

400 tons, state bridgework, Chemung County, N. Y.; bids closed.

348 tons, state bridgework, Route 18 (1953), Sec. 2, Middlesex County, N. J., bids March 10; also required, 143 tons of reinforcing steel.

275 tons, Sears, Roebuck shopping center, Renton, Wash.; Cawdrey & Vemo, Seattle, low at $1,644,899.

200 tons, Boeing wing structural facility, Seattle; H. S. Ferguson Co., Seattle, low at $256,200.

195 tons, angles, General Stores Supply Office, Navy, Philadelphia; bids Mar. 2.

160 tons, supply officer, Naval shipyard, Portsmouth, N. H.; bids Mar. 13.

100 tons, Idaho State highway project, Sand Point; bids rejected and will be rebid.

90 tons, University of Washington faculty center, Seattle; Wick Construction Co., Seattle, general contractor.

REINFORCING BARS . . .

REINFORCING BARS PLACED

220 tons, two state highway structures, Rehoboth, Mass., to Plantations Steel Co., Providence, R. I.; Campanella & Cardi Construction Co. Inc., Hillsgrove, R. I., general contractor.

REINFORCING BARS PENDING

2750 tons, second phase cofferdam, Ice Harbor Dam, Snake River; bids to the U. S. Engineer, Walla Walla, Wash., about Apr. 30.

2500 tons, north approaches, Lake Washington ship canal bridge, Seattle; general contract to MacRae Bros., Seattle, low at $1,838,402.

900 tons, Oregon State highway projects, Benton, Josephine, Union, and Yamhill counties; bids to Salem, Oreg., Mar. 3.

470 tons, University Street Apartment, Seattle; Teugel & Co., Seattle, general contractor.

143 tons, state bridgework, Route 18 (1953), Sec. 2, Middlesex County, N. J., bids March 10; 348 tons of structural steel also required.

111 tons, state bridgework, Essex County, N. J., bids March 12; 513 tons of structural steel also required.

PLATES . . .

PLATES PLACED

2000 tons, including shapes, two Navy craft, to Gunderson Bros. Engineering Corp., Portland, Oreg.

PLATES PENDING

18,855 tons, 24.12 mile Tolt River water supply line for Seattle, 54, 60, and 66 in. diameter; various schedules and alternates; Valley Construction Co. and Morrison-Knudsen Co., Seattle, apparently joint low for concrete cylinder, $6,984,693.

1100 tons, government-furnished sheet steel piling, second phase cofferdam, Ice Harbor Dam project; bids to U. S. Engineer, Walla Walla, Wash., about Apr. 30.

500 tons, elevated water tank, Vernon facility, Portland, Oreg.; plans approved; bids soon.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Union Pacific, 75 turbocharged diesel-electric locomotives to the Electro-Motive Div., General Motors Corp., La Grange, Ill.; the 2400-hp locomotives will cost over $19 million.

RAILROAD CARS PLACED

Norfolk & Southern, 250 boxcars, to American Car & Foundry Div., ACF Industries Inc., New York.

Atchison, Topeka & Santa Fe, 50 dryflow cars, to General American Transportation Corp., Chicago, and 50 covered hoppercars, to Pullman-Standard Car Mfg. Co., Chicago.

Missouri-Kansas-Texas, four all-steel caboose cars, to Thrall Car Co., East Chicago, Ind.

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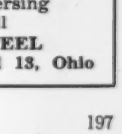

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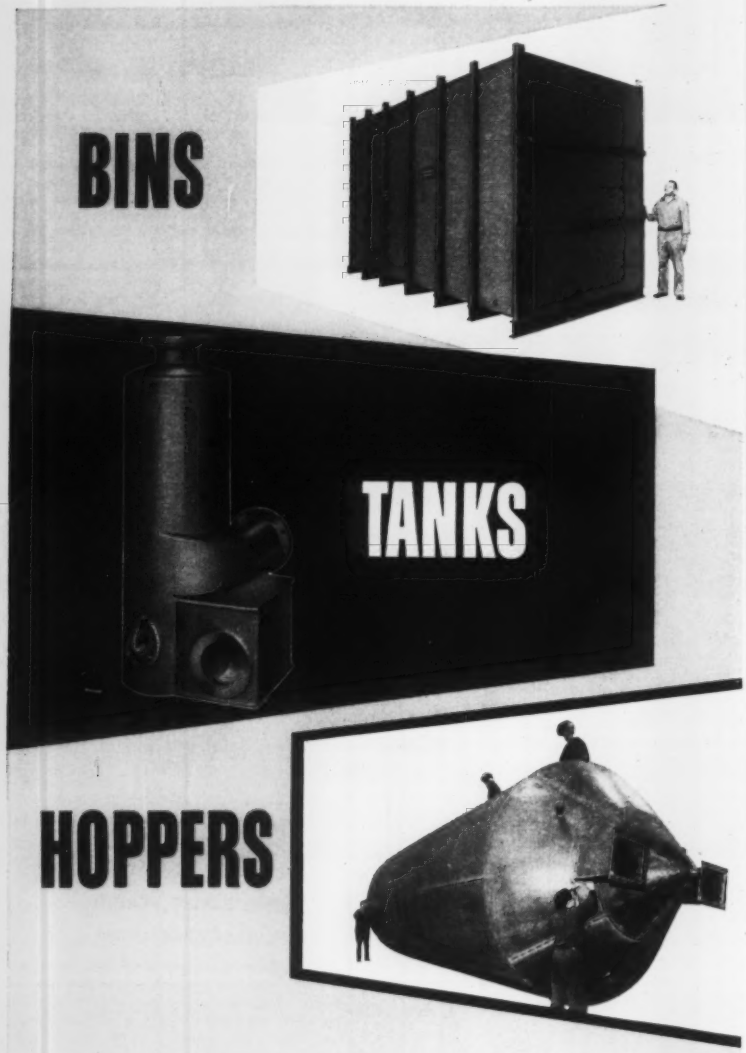

• for storage or process • lined or unlined

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Music and fun in the children's ward —on Junior Red Cross Visiting Day.

One "Youth Gang" we need more of...

Rock 'n rollers? That's right. *Rock 'n rollers in a children's hospital.*

The three "gang members" are Junior Red Cross members who've taken an afternoon of their time to go to the hospital and entertain some little crippled kids. Reassuring, isn't it?

They do things like this all the time. Regularly. Girls and boys.

20 million of our sons and daughters make up Junior Red Cross—the largest youth organization in the country. Junior members take part in every one of the Red Cross service programs that young people can help to carry on.

When disasters hit, Junior Red Cross volunteers help in many ways—as messengers, typists, canteen workers, information clerks. Many Junior Red Cross members have served with real distinction in disaster emergencies.

Through the Gift Box Program in their schools, Juniors send relief supplies to children overseas. Like all Junior Red Cross activities, this program is financed entirely by the Juniors themselves.

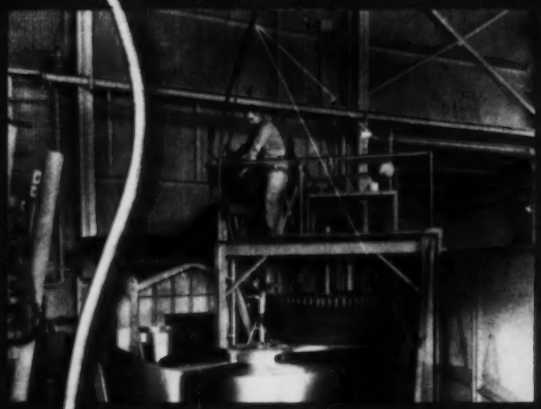
Friendship between children all over the world is fostered by the Junior Red Cross correspondence-album and art programs.

Junior Red Cross is at work every day, helping to build a strong, decent, responsible young America.

These are kids we don't have to worry about. Let's be sure they know they can depend on *us.*

Join +

On the job when you need it most



There IS a string attached to lower steelmaking costs . . .

A nylon string . . . that is the heart of the revolutionary new Lee Wilson Opened Coil Annealing System that promises to set annealing production records wherever installed.

The nylon string is ingeniously threaded between coil laminations, actually opening up the coil to permit the hot annealing gases free movement over every square foot of coil surface. In this manner heat can be applied to both sides of each wrap of the coil simultaneously—not through the mass of the coil. Consequently the coil can be brought to heat faster, more uniformly—soaked with precision—cooled faster with greater control.

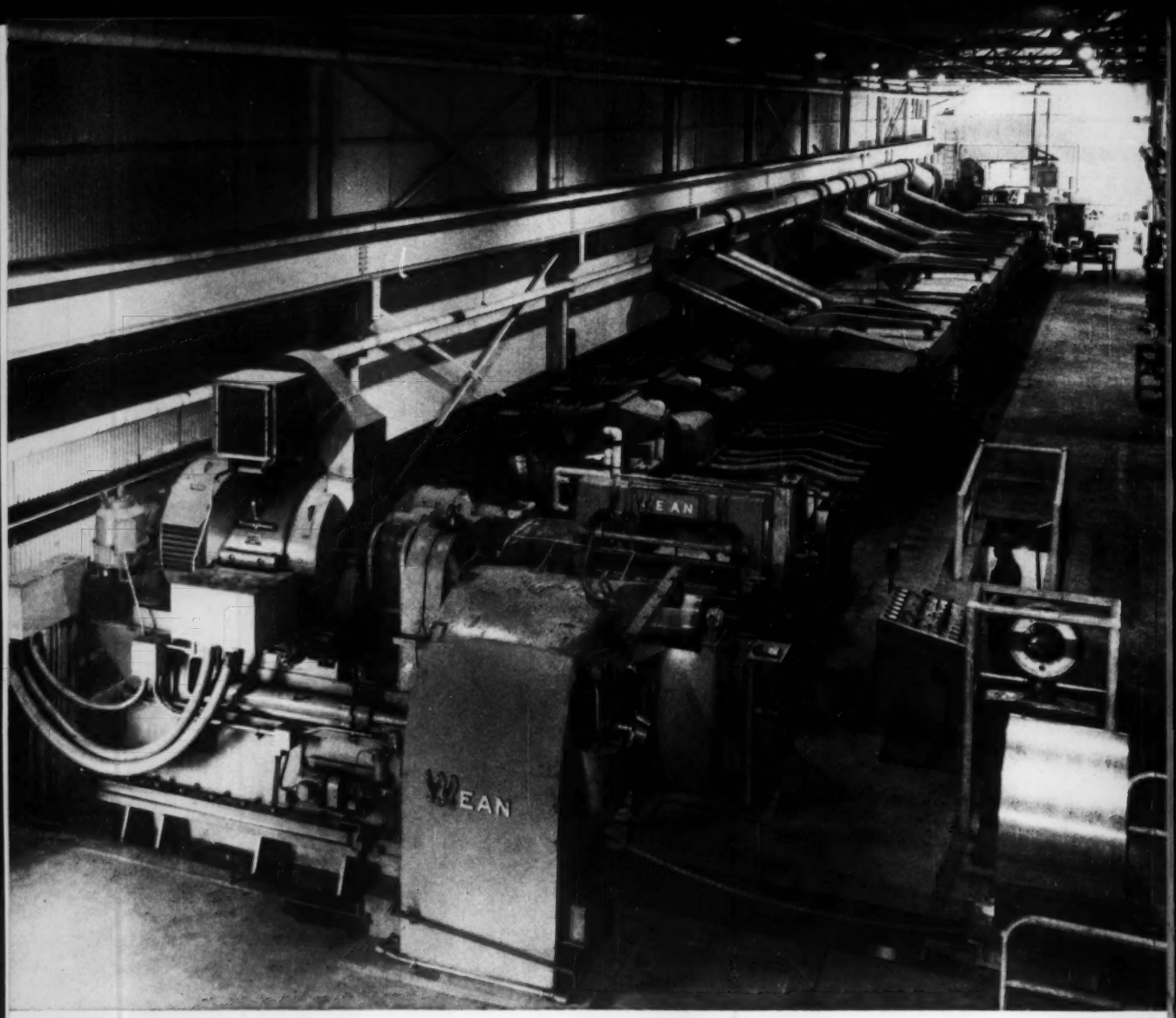
The result: a better annealed steel at substantially increased man-hour production rates. It's the talk of the industry. Be sure you're fully acquainted with Opened Coil Annealing. Contact your Lee Wilson sales engineer or write for complete literature.

Lee Wilson ENGINEERING COMPANY, INC.

HIGH PRODUCTION ANNEALING SYSTEMS

MAKE THE BEST METALS BETTER

DESIGNERS AND BUILDERS OF OPENED COIL AND SHAFT STACK FURNACES



Wheeling Steel cleans tin plate faster, more efficiently with Wean Line

The new Wean tin plate cleaning line at Wheeling Steel's Yorkville plant is an excellent example of modern electrolytic cleaning techniques. Grid-type current application above and below the moving strip permits line speeds to 2000 feet per minute with complete palm oil removal. Through Wean's tension-type design, with automatically controlled "floating" mandrel, accurate strip tracking is assured at all line speeds. This design also eliminates the floor space previously required for exit-end looping. Coils up to 24 tons, in widths from 18 to 45 inches and all usual tin plate thicknesses, can be handled by the line.

Wean has pioneered in the design and development of electrolytic cleaning processes: has built 80% of all lines in use today. This experience plus Wean's *creative engineering* ability can benefit you, whatever your requirements for continuous steel processing lines.

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